

Ernst, Richard et al.

**Conference Paper**

## Overcoming inequality through education - 2009

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## The Global Society

# Overcoming Inequality through Education – 2009

### The Challenges

According to the ILO, income inequality has increased in about two-third of the countries of the world since 1990s. The current global financial crisis and the accompanying worldwide economic recession are expected to further widen the gap between the rich and the poor (ILO 2008).

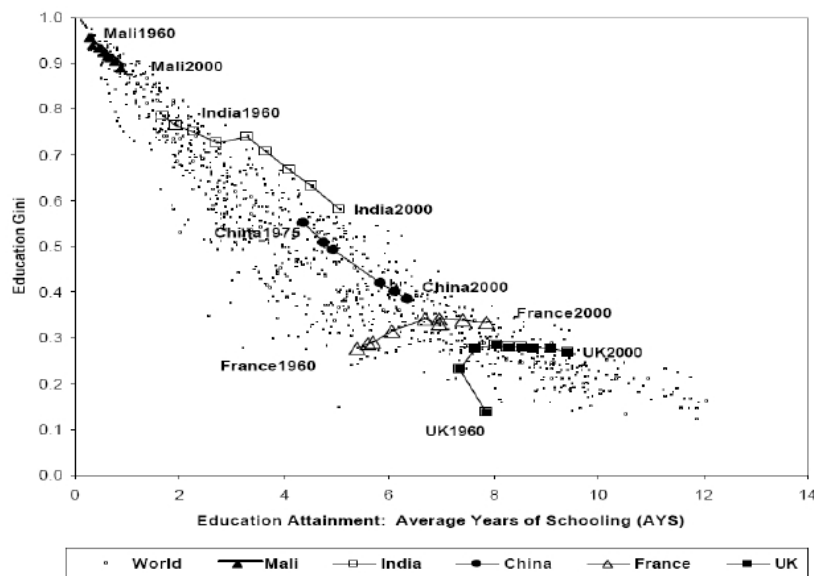


Different qualifications and skills are widely accepted as one of the major factors behind different income levels of individuals. Education is usually taken as the main way in which individuals can learn more skills and qualify themselves to increase their potential of employability and of high income in the future.

Despite other potential influential factors behind the increasing income inequality worldwide, improving education quality is expected to make a substantial contribution to mitigating both interpersonal and, at the end of the road, even international income inequality.

What are effective (and efficient) means for improving education quality? Can education quality be effectively improved solely by providing more financial support for education affairs in general? How could incentives of students and teachers be enhanced? What is an appropriate division of work between government and the private sector in education? Are successful education policies in a country idiosyncratic or can they be blueprints of education policies being applied in the other countries?

Figure 1: Education Gini and Education Attainment: Selected Countries and World  
a)



Source: Thomas, Wang and Fan (2002), A New Dataset on Inequality in Education: Gini and Theil Indices of Schooling for 140 Countries, 1960-2000, p. 10 and p.1





## **Proposed Solutions**

### **Richard Ernst**

*Nobel Laureate, Swiss Federal Institute of Technology, Zurich*

#### ***The present situation and urgent remedies***

Education plays an enormous role in the formation of creative personalities and of adapted members of human society. By education and learning we have brought our genetic inheritance to blossom. Human history and human culture are the products of millennia of learning and teaching. We can not overestimate the importance of education for the past and the future of mankind.

Education is by far the most important measure (1) to warrant self-fulfilment of individuals and, at the same time, (2) to warrant a well functional society. The more developed and entangled a gregarious human group, community, State or the international society is, the more will it depend on intense educational efforts to warrant functionality and peaceful cooperation. We know that up to twenty years of personal education are needed, being followed by never ending life-long-learning.

From these few remarks, it becomes evident that education is indeed a primary measure for overcoming inequality within and between societal groups and States. It becomes also obvious that education is a fundamental responsibility of each community and each State. It might even be identified as the most important of all public and governmental tasks.

For enabling the self-fulfilment of individuals, who can freely develop all their genetic gifts, there is no alternative to education. However for achieving a functional society at large, two possible measures are conceivable: (2a) education and (2a) law-enforcement. Both have to act side by side. However, the emphasis should be focused as much as possible on education in view of spontaneous responsible behavior. Law-enforcement is only a last resort's measure when education towards responsibility has failed.

Education itself has numerous facets. The most efficient learning happens not in class-room teaching but in the form of trial-and-error self-learning processes by doing and experiencing nature and natural or human-inflicted constraints. Class-room teaching is cheap and easy, but it is also the least effective form of learning. It should be abandoned wherever possible and replaced by a well-prepared learning environment with facilities for performing experiments and learning by doing. At universities, already beginning students should be integrated in active research groups. This implies that adequate experimental research facilities belong to all establishments of higher learning. Obviously, for this reason research should never be separated from teaching and is best performed in universities and not within stand-alone research institutions. The research organization in the US can serve as a positive role model in this respect. Clearly, for developing countries it is an expensive approach that needs financial support from the developed partner States.

It is important to realize that in English the term "education" has two connotations that are distinct but often misinterpreted for linguistic reasons. In German, however, the two terms "Ausbildung" and "Bildung" are clearly distinguishable, and both translate into "education". All too often, schools in developed and in developing countries concentrate almost exclusively on "Ausbildung," on instructions for providing skills, vocational and social skills, skills that often lead to specialization and specialized professions. Learning languages, natural sciences, and mathematics, as well as the manual trade skills, all belong to the teaching contents of education in the sense of "Ausbildung." They allow one to find a particular job and they are important for the training of numerous specialists that are needed in the societal interplay.



“Ausbildung” has yet little to do with becoming a balanced, full-fledged human being, combining wisdom and compassion. In this context, the term “Bildung” becomes relevant. “Bildung” has no English equivalent but may be translated by a number of paraphrasing terms, such as “comprehensive formation,” “personality formation,” “character formation,” and “creating human values.” Let me abbreviate this set by “humanistic formation” and contrast it with the term “education” used for providing merely vocational skills. It is obvious that humanistic formation, only, leads to mature personalities with reflected opinions and foresight who we need so urgently in our short-sighted time, in contrast to the narrow-minded functionaries that often are being produced by vocational training alone, for example in our business schools.

Humanistic formation has been promoted vigorously by *Alexander von Humboldt* (1769–1859) and corresponds to the idealistic and humanist approach of the period of Enlightenment. Its goals request not only broad “knowledge” but even more so “understanding” based on wisdom and empathy. Ethics and ethical considerations also play a central role in humanistic formation. Today, such an approach is needed more than ever before, being faced with a very difficult economical situation and a future as uncertain as ever. Humanistic formation provides ultimate flexibility in adjusting to a difficult and unpredictable future. Educating specialists, on the other hand, often leads to inflexibility and potential unemployment.

It can hardly be questioned that much of the catastrophic problems of today’s ill-guided business system, which became so utterly apparent last year, are rooting in the glaring absence of wisdom-, ethics-, and empathy-guided understanding among the main actors. It was purely *animalistic money-mindedness* in abysmal contrast to humanistic ideals that was driving the world economy into a situation that punishes once again primarily the weak and innocent members of the global society. The presently still prevailing profit-oriented ideology must inevitably lead to a series of future aggravating catastrophic situations the nearer we come to the global limits of growth.

#### ***What can we learn from these observations and what can we propose to do?***

- **Education in the sense of humanistic and ethical formation shall be stressed by all means in all countries and at all levels of the global population, and particularly in business schools.** Governments shall be made responsible for enabling free humanistic formation. Special pressure shall be exerted on totalitarian States that might feel endangered by allowing for free humanistic formation.
- All efforts to overcome inequality through education of deprived or developing populations are in vain unless the ruling populations in developed countries are motivated or forced to behave according to ethical and humanistic principles. In this sense **the humanistic and ethical formation of our leaders in business and politics is a most urgent prerequisite for progress towards equality.**
- **A novel understanding of humanistic values based on ethics shall be promoted. Short-term monetary incentives shall be replaced by foresight and by ethical responsibility towards the global society.** We urgently need lasting values that have almost entirely been lost within today’s commercial community (Sales promotion is in fact a negative value!).
- **The old-fashioned class-room teaching methods, still prevailing today, shall be replaced by “learning by doing,” using “trial-and-error approaches” in realistic experimental situations. Motivation is the key word in teaching!** A motivated student is learning by himself or by herself.



## **Laura Liswood**

*Secretary-General, Council of Women World Leaders; Senior Advisor, Goldman Sachs*

### **Girls education**

A key and essential component of the challenge of education is the access to all levels of education for girls. The World Economic Forum Gender Gap report reflects on the gaps between girls education and boys education for over 110 countries. In many countries, the gap is greater than 50% starting from primary education levels.

The World Bank has clearly found that girls education has a direct positive correlation with health of a family and reduction of family size. It also continues generational to the next generation of girls.

Overcoming inequality in this area is not just a matter of providing more dollars, aid or government attention, although those are necessary. They are just not sufficient. Culture and its correlary, religion, often plays a dramatically powerful role in determining whether girls will have access to education. Prime example of that would be the Taliban's prohibition against girls education.

Other gatekeepers for girls to go to school are economic. The family may not be able to afford the fees for school and only the boy child or children get to go. The girl may be pulled from school to help the mother fetch water or firewood, an all day event in some places harshly hit with environmental degradation. Girls may be sold by their fathers and sent to the city for human trafficking or other.

No access to toilet facilities can prevent teenage girls from continuing education.

Governments particularly must play a strong local role in resolving both the cultural and resource constraints. Incentives such as those put in place by the Government of Rajasthan in India are examples-the family gets a bike if the girl stays in primary school and a motorbike if she stays through secondary school. This does not get to the heart of the basic devaluation of the girl child but the end result is she gets educated.

Quality of education is essential too as in many schools boys are given the clear message that girls and women are not equal to them and can be treated with fewer human rights or even violence.

It is not enough to just focus on education when we know that this is a different issue when viewed through the lens of girls.

## **Wan-Hsin Liu**

*Kiel Institute for the World Economy*

### **1. Dismiss the belief in the one-to-one relationship between equal education resources and equal education outcomes.**

Before designing an effective policy package, it is important to recognise that equal education resources such as equal expenditure on students and equal facilities are empirically found not to result in equal outcomes. Empirical evidence suggests that extra resources are required for supporting disadvantaged students to realise more equal employability opportunity of these students in the future.



## **2. Centralise performance standard determination, provide external performance tests for students but delegate autonomy to local governments and schools to make more appropriate educational decisions.**

Because of the multidimensionality and the extremely high relevance of education for the sustainable development of every country, it is expected to be efficient, if the central government can determine education goals in terms of clearly defined performance standards. Based on these standards, external controls such as external performance tests for students can be implemented. Moreover, sufficient autonomy should be delegated to the local players such as local governments and schools who know the local-specific needs and resources much better than the central government.

External controls, accompanied with appropriate reward and sanction mechanisms, are expected to exert additional but healthy pressure on the local players to optimise the allocation of scarce resources. Such controls are also expected to promote a healthy competition between schools, between teachers as well as between students.

## **3. Enhance the incentives of teachers.**

In addition to external controls and the accompanying reward and sanction mechanisms, some more policy measures aiming at enhancing teachers' incentives are required to promote effective teaching and efficient learning. This does not mean that teachers should generally be better paid than now. What seems more appropriate though, is to introduce, at least partly, a performance related payment system: only teachers who, for example, voluntarily undertake additional assignments and carry them out excellently should be better rewarded. Additionally, teachers may be granted more autonomy to discuss with their students to arrange the most appropriate learning plans on their own, taking the relative strength among different students into account.

## **4. Keep a long breath.**

Studies show that it takes quite a long time to effectively improve the education quality and students' skills and performance. In other words, success won't be easy and swift even after determining clear education goals and applying appropriate education policies. Hence, long-term and stable education policies, continuous education investments and above all a long breath of all agents involved are required.

## ***Background***

Pertinent differences in the amount and the quality of human capital, related to inequality in educational attainment and education quality are often considered to be at the roots of interpersonal and international income inequality. Empirical studies find that education inequality measured in Education GINI coefficients has been mitigated and education attainment in years has been extended in many countries in the world (Thomas, Wang and Fan 2002) – from this one would expect a decrease in income inequality in the long run. However, many countries suffer from even higher income inequality over the last decades. This seeming contradiction may be an indication that there is no easy road from mainly extending education attainment towards altering the opportunity structure and, moreover, that it may not be appropriate to define equal opportunity in terms of equality of outcome.

There is increasing empirical evidence that only education policies which indeed improve education quality and help enhance students' cognitive skills and learning performance are likely to make substantial and positive contributions to mitigating interpersonal and international unequal income distribution and on economic growth (Hanushek and Woessmann 2008). The positive effects of improved education quality and cognitive skills of students on income equality are harnessed in a more productive institutional environment for markets and legal systems (e.g., protection of property rights, openness to international trade). Both, the level of



cognitive skills and the quality of the institutional environment are important for and reinforce each other in fostering economic development.

## **Heather Munroe-Blum**

*Principal, Vice-Chancellor and Professor in Medicine, McGill University*

The global economic downturn has caused serious pain to individuals across the world and threatens to widen significantly further the gap between haves and have-nots, in developed and developing societies alike. The crisis, however, has also forced governments, organizations and individuals to step back and fundamentally re-examine their practices and values. This year served as a reminder that collectively we need to balance financial profit with long-term sustainability, individual gain with social justice, and progress with prudence.

Education – primary, secondary and tertiary – is perhaps the most critical means of improving the welfare of disadvantaged populations, particularly as more and more of the world enters into the global knowledge society. It is a cornerstone for improving both social justice and economic productivity. Education, however, should be viewed as inextricably linked to the health, social, economic and security status of individuals and societies. As such, education is not the responsibility of governments and the education sector alone, but is better positioned as a core concern of the entire community, including families, business and other organizations. The old adage, “It takes a village to raise a child,” is never more true than in the educational arena. To reduce the gap between the haves and the have-nots, we need to embrace broad access to quality education as our strongest social value.

The topic of overcoming inequality through education is extensive, and includes all levels of education in both developed and developing societies. As someone trained in epidemiology, I am a firm believer in early childhood intervention as a means of improving early literacy and ultimately educational and health outcomes for disadvantaged populations. In my discussion, however, I will focus on my current area of responsibility and expertise: mechanisms for fostering quality, and ensuring access for disadvantaged populations in higher or post-secondary education in North America.

### **Quality**

In the global knowledge society, universities play perhaps the most critical role in helping a country improve its economic productivity and social quality of life. Universities educate the skilled, internationally engaged and creative individuals needed as entrepreneurs and leaders for businesses to compete effectively; they create the research, scholarship and knowledge that underlie the development of value-added products and processes and the innovative applications that bring these into broader societal access. They provide a hub for high-level international networks and partnerships. As such, it is vital that the higher education sector focuses on performance and quality, as well as accessibility, to ensure that society reaps maximum value from its investment.

A stable funding base is of course key to quality. But with this as a given, two key factors underlie quality in higher education:

- Understanding the importance of differentiated mission amongst institutions in a system, and understanding who you serve. A differentiated higher education sector, in which universities, government, business and society clearly understand, and fund appropriately, a broad range of university missions, in geographically distributed universities and colleges;
- A commitment to ongoing institutional accountability and transparency in measurement of performance against appropriate criteria, with concrete indicators, against both the institution’s past performance and peers.





## ***Understanding your mission and your stakeholders***

In education, as with clothing, one size should not fit all. Perhaps the most dramatic change in education over the last decades has been the so-called “massification” of higher education, in which a larger and larger segment of the population is now participating in some form of post-secondary education. Higher education today fills a huge array of societal needs, including but not limited to:

- vocational training for trades and professions (including the credentialing of immigrants and refugees);
- the development of knowledge and skilled workers focused on the needs of individual regions;
- advanced education, including the development of ethical leadership, entrepreneurship, high impact research and scholarship, and creative skills, to create the highly skilled workers needed for countries to compete in the national and global knowledge economies;
- and the creation of strategic partnerships for the production of internationally competitive research and scholarship, ideally with knowledge users, such as business, the healthcare system, government and non-profit organizations.

Community colleges, regional universities and research-intensive universities can all make profound contributions to society – as long as they embrace and live a meaningful institutional mission. A corollary of understanding mission is also understanding who it is you serve. For some institutions, this may be primarily a local community, and particularly governments and businesses with a need for workers with specific vocational skills. For others, the key stakeholders may be local, national and international. Simply put, the foundation of excellence is knowing who you are and what you are trying to do. Only then can universities and colleges develop and implement the strategies needed to thrive for maximum contribution and impact on both social equality and economic terms. Governments, too, require mechanisms that recognize and fund institutions of higher education based on these differential missions and contributions.

*A focus on performance:* Another trend in recent years has been an increased emphasis on measuring performance in the higher education sector, as demonstrated in part by the proliferation of national and international rankings. As universities become more and more crucial to a region or country’s performance in the global knowledge economy, governments and societies are demanding accountability for their investment.

A commitment to measuring performance and researching and implementing best practices, within the context of an institution’s individual mission, is vital to fostering quality. Finding indicators that truly capture performance in higher education can be difficult, as many vital contributions, such as the knowledge transferred to business and organizations through employment of recent graduates, are difficult to measure. There is a lively ongoing debate as to whether too much emphasis has been put on patents and licences, for example, as a measure of knowledge transfer. Universities and governments need to continue work to develop optimal indicators. The process is, and needs to be, profoundly iterative, one that changes as a society’s needs and context changes.

The key here, as with mission, is differentiation. A community college will have a different set of indicators and peer institutions, than a regional or a research-intensive institution, but should have no less of an emphasis on performance. Institutions of higher education can look to like-missioned institutions to measure performance and share best practices. To improve quality, this process must weave itself throughout the daily work of an institution and be embraced by its members, with continual research, implementation, evaluation and adaptation based on this iterative cycle of evaluation. National and regional culture and character can play a role, but I strongly believe that best practices between institutions with similar missions can be shared effectively (sometimes more easily) across borders.



### ***Inclusion, access and funding***

Increasing access to higher education for socio-economically disadvantaged populations is a challenge, largely due to the multiple factors involved. For example, the economic development status of a nation can predict which mechanisms will best serve this goal, and the mechanisms will be different in more economically developed nations. As well, family context and commitment to education, education and income levels of parents, geographical factors, quality of primary and tertiary education and support provided to disadvantaged populations (both before and after entry into university), access to information on the benefits of higher education all play a role. Due to the complexity of the problem, no one sector, whether government, universities, business or non-profit, can provide solutions, but need to work in partnership.

In working to address a range of complex scientific, scholarly, professional practice and social issues, universities as institutions benefit greatly from increased accessibility, where exposure to the perspectives of individuals from diverse backgrounds and circumstances, and who identify with different segments of the broader community enrich the learning experience. As the world globalizes and shrinks, integrating together students, professors and staff with a wide variety of backgrounds – socio-economic, cultural, and geographic – can be an indispensable part of providing a stimulating and high performing academic environment. Both for our own health and the health of society around us, universities need to continue to reach out to engage those who have the potential to succeed as members of a university or college community, but who lack the means to participate with special measures. The factors that universities can most directly influence are reducing financial barriers, providing bridging mentorship and support for disadvantaged populations, and access to information and role models demonstrating the long-term life benefits of university.

Regarding financial barriers, our experience in developed countries is that lower or no tuition does not lead to greater university completion rates. In Canada, for example, Quebec has the lowest university tuition of any province, but this policy has not promoted greater access. Quebec has the third-lowest graduation rate (from undergraduate degrees) of Canada's ten provinces. Nova Scotia, on the other hand, has the highest tuition, but also the highest university graduation rate. Instead, moderate tuition rates can ensure that those who are able to pay a greater share of the full costs of education do so. This then allows us to reinvest a portion of tuition revenue into financial aid for economically disadvantaged students, thus increasing access. Tuition fees plus an institutional commitment to growing student aid, plus inciting philanthropy, can increase participation more than free tuition.

Contributions to the cost of education by families and students who can afford it also increase the perceived value of education and the long-term stability of the university funding base. Again, the responsibility for funding higher education works best as a partnership among government, students, families, business, alumni and philanthropists. When there is an overreliance on one of these groups, unexpected events such as a change in government or a precipitous stock market decline can wreak havoc on a university's ability to plan for the long-term, thus hindering quality.

### **Sanjit Bunker Roy**

*Founder, Barefoot College*

### ***The Barefoot College***

The Barefoot College was established over 38 years ago in the deserts of Rajasthan in India. The sole objective was to improve the quality of life of the very poor, the impoverished, the economically and socially marginalised and the physically challenged living on less than \$ 1/day and empower them with the skills and the knowledge to stand on their own two feet.



It's the only College in India built by the poor and only for the poor. Mahatma Gandhi's thoughts live in the lifestyle and work style of the College. Living conditions are simple so that the poor feel comfortable. Everyone sits, eats and works on the floor. Everyone takes a living wage instead of a market wage.

There is a spiritual dimension in the College because working relationship depends totally on mutual trust, tolerance, patience, compassion, equality and generosity. The idea is to apply the knowledge and skills the poor, the deprived, the neglected, the semiliterate and the impoverished rural poor already possess for their own development thus making them independent and let them live with self respect and dignity.

No one comes to work for the money, power, position or security. However long you stay no one can get more than US-\$150/month. The difference between the highest and lowest paid is not more than 1:2. There have been no written contracts for 30 years. Very few people leave because in spite of their incredible skills they are "unemployable" in the eyes of the world. We are so paranoid and misguided about degrees and qualifications supposed to certify capacity and competence.

It has been shown that if the learning and re-learning environment is relaxed, non-structured and informal the rural men and women are capable of wonders. By understanding, respecting and applying traditional skills needed to provide basic needs (drinking water, lighting, education, health, employment, housing) semiliterate and very poor rural men and women have shown they can not only improve their quality of life but also free themselves from exploitation, injustice, discrimination and fear.

The College believes the very poor have every right to have access to, control, manage and own the most sophisticated of technologies to improve their own lives. Just because they cannot read and write there is no reason why the very poor and illiterate men and women cannot be water and solar engineers, designers, communicators, midwives, architects and rural social entrepreneurs. They have shown the impossible is possible and confirmed what Mark Twain said, "Never Let School interfere with your Education."

The Gandhian message through the Barefoot College has spread to 13 States all over India and by 2009 will have spread to more than 17 of the Least Developed Countries in Africa.

### ***Innovation in design: Solutions***

The Barefoot College believes one of the keys to minimizing of human suffering is in the hands of the impoverished rural women strong enough and confident enough to shape their own destiny. Over the last 15 years hundreds of illiterate and semi-literate rural women have been trained in non-traditional occupations changing the lifestyle and mindset of village India in several States all over the country. They have been trained as barefoot solar engineers, hand pump mechanics, designers, architects, masons (for rainwater harvesting), teachers, doctors, weavers, computer programmers and political leaders fighting for their rights for minimum wages.

When the ideas, knowledge and skills of the marginalised poor are used their own development and up liftment that's the first step towards confidence building (against capacity building) developing self esteem and reducing the dependency on long term hand outs from outside. Eventually the dream is one day they stand on their own feet and face the world as human beings.

What is innovative is that the Barefoot College has given priority to the ideas and thoughts as the rural poor see as important-and respect their wishes. For instance the poor see very little value and relevance to paper degree and qualifications from formal Colleges and Universities. The importance and respect they give to their own traditional knowledge, skills and practical wisdom and keeping the oral tradition alive from father to son is deep rooted and cannot be replaced. Much of the focus of the Barefoot College has been to "educate" men, women and



children living in remote villages all over India to be aware of this precious resource so that eventually they stay in their villages and not migrate to cities living in slums.

It is also the main reason why the College gives no importance to “urban” experts with paper degrees and qualifications. In fact it is disqualification if the person with a degree wants to come and work in the College!

What is yet another innovation the Barefoot College has demonstrated in practice is building the confidence and competence of very poor people – the barefoot educators, not just teachers – by training them to provide a service to their own community thus making them as self reliant rural possible. Over the last 30 years several thousand poor young unemployed and unemployable rural youth, both men and women, have been trained as barefoot professionals.

Thus barefoot educators-doctors, night school teachers, solar engineers, water drillers, architects, designers, midwives masons, communicators, hand pump mechanics, computer programmes and accountants by the thousands have passed through the College. They have demonstrated that “experts” with paper qualifications are really **not** required to alleviate human suffering in villages if the goal is to make them self sufficient and sustainable.

“First they ignore you, then they laugh at you, then they fight you and then you win.” (Mahatma Gandhi)

## **Carlos Ivan Simonsen Leal**

*President, Fundação Getúlio Vargas*

### ***The demographic window***

The level of schooling attained by the economically active population (EAP) of a country has strong connections to its productive and innovative capacity. Many emerging countries are going through major shifts in the structure of their age pyramids. In Brazil, projections for the next decades point toward a far greater participation of the EAP in the total population, as the birth rate declines and today’s children and adolescents join the workforce. This represents a demographic window, or an opportunity to ensure that better income distribution will be achieved, provided there is enough investment in education and, at the same time, that this investment is correctly focused. If the necessary actions are not taken now, the window will be progressively closed as the falling birth rate makes it more difficult to educate the EAP.

### ***The distribution of education***

National school systems often incorporate policies aimed at promoting universal access to education, as well as incentives targeted at specific groups or subjects (in the form of competitions, awards and scholarships). Furthermore, many countries have implemented policies that are explicitly targeted at affecting the distribution of education among social and ethnic groups. This raises the issue of how to evaluate these policies, not only in the technical sense of how to assess outcomes, but also in the political-philosophical sense of what is considered a desirable outcome (the so-called Social Choice Theory).

There are many different schools of thought regarding social choice (Stiglitz 2000, and Sen 1999). Among the most notable of these are utilitarianism and Rawlsianism. In the utilitarian perspective, an outcome is considered desirable as long as it propitiates a positive shift in average individual welfare, even if it leaves some individuals worse off. On the other hand, for Rawlsians, social welfare should be measured exclusively as a function of the worst-off individual, and outcomes are desirable only as long as they improve that individual’s well-being.

It is a trait of many social choice theories that an outcome can be considered acceptable even if it increases inequality. For instance, for utilitarianism, a policy that increased the educational



level of the richest, while holding constant the education provided to other groups, would be considered acceptable. Some theories attempt to incorporate “social justice” by postulating an explicit link between social welfare and inequality (as measured, e.g., by the Gini index of the welfare distribution).

Thus, social choice admits many different mutually-exclusive definitions, which lead to contradictory evaluations of outcomes as “desirable” or not. Furthermore, no theory is demonstrably “correct,” as in the final analysis they are all based on personal moral judgments.

One must acknowledge though, that there may be a situation in which a change in the characteristic of educational policy will benefit from increasing both the worse-off and the average individuals at the same time.

There is ample literature on the technical issue of how to evaluate outcomes, but the various conclusions must be put into perspective by the continual development in methodological approaches for measurement and analysis. One particularly clear-cut conclusion, however, is that economic returns to schooling are unequally distributed among the population.

Therefore, in an environment with limited resources, it is advisable for government policies aimed at expanding public access to education to focus on those sectors of the population that have the highest potential gain. For Brazil, returns to schooling for different groups were estimated by Simonsen Leal and Werlang (1991). Nevertheless, it seems advisable also to ponder the duality between maximizing the aggregate return of investing in education and reducing social inequality. Moreover, it seems plausible that a situation can exist in which a change in the characteristics of the educational system will benefit from the possibility of improving both at the same time (inside the production possibility frontier, or PPF). As will be argued below, information and communication technologies (ICTs) may contribute to weaken or even circumvent this duality.

### ***New information and communication technologies***

The digital inclusion of more disadvantaged sectors of the population, as well as the incorporation of new ICTs into schools, may result in significant shifts in economic outcomes, although these have not yet been fully assessed. Some results of pilot programs in Brazil are available (World Economic Forum 2005).

From the individual point of view, familiarity and competence with ICTs represent entry to the ever-growing range of job positions requiring this kind of know-how, in all sectors of the economy. Thus, closing the digital gap is a fundamental part in making the job market open to all sectors of the population. It is interesting to note that competence with ICTs may represent either a complementary or substitute good to traditional (school) education.

The potential benefits of introducing ICTs into schools include allowing more (and more diversified) content to be delivered to students at greater speed, providing the basis for new teaching and student-interaction formats, and, in some cases, reducing the costs usually incurred by schools in distant locations, such as isolated communities (e.g., in the Brazilian Amazon Forest). In this sense, ICTs may be able to shift the production possibility frontier of education (average versus worst-off) of a given country upwards.

### ***Assessing the quality of education***

The level of formal education, as represented by years of schooling, is not an accurate measure of the effective cognitive ability of an individual. Assessing the quality of education is essential to understand its economic effects.

The quality of education can be evaluated at three levels:

- In terms of the **cognitive ability** with which it endows students. This can be measured through tests such as the PISA.



- In terms of to what extent it provides **training** to students, thus producing workers that satisfy the demands of the job market. This can be measured directly through surveys with companies and employment agencies, or indirectly through such measures as salaries and number of job openings.
- In terms of the increases in productivity that it brings to the economy. Arguably, endowing students with the ability to **think creatively** and to **innovate** is the ultimate goal of the educational system. It is a near-consensus in growth economics that these abilities, along with technological advance, form the basis of productivity growth. However, isolating the contribution of education to the economic development of a country is a difficult task.

These three levels of evaluation are not mutually exclusive, but rather represent different proxies or correlates by which to assess the quality of education received by students.

### ***The incentive structure in education***

To ensure that access to education translates into social and economic benefits, it is necessary to alter the incentive structure associated with the school system. This involves providing incentives not only to teachers and school managers, but also to students and their families (through exams such as the National High School Exam, or ENEM). The appropriate incentives can be achieved only through performance evaluation and compensation.

### ***The dangers of short-term policy decisions***

The deepening and prolongation of the economic crisis, especially in developing countries, may reduce the flow of resources to education and divert these investments toward social programs that have more short-term results.

The long-run implications related to these decisions are not always clear for policymakers. This is especially true in cultures where government leaders are not used to the concept of intellectual capital, and where education is all too often viewed as a current expenditure, not as an investment.

To ensure that decisions in this area are taken in a consistent manner, based in sound economic principles and in an accurate evaluation of the long-term costs and benefits of different policies, requires the development of a strategic plan to serve as a guideline and decision-making framework. Fundação Getúlio Vargas has a long tradition of aiding public and private sector institutions in strategic planning.