

Preface

Following on the World Bank's 2001 publication, *China and the Knowledge Economy: Seizing the 21st Century*, this book is another exceptional product I would like to recommend to the Chinese audience. It represents three years of hard work by the authors in collaboration with Chinese experts, and the analysis and recommendations are extremely relevant for China.

Today, many high-income countries are reshaping their human resource development strategies. In the face of increasingly fierce international competition, these countries are setting up lifelong learning systems as an essential national policy for maintaining their global competitive advantage.

Although China has a vast population, it still lacks sufficient human talent. One of the country's main strategies is therefore to develop such talent by turning the ostensible burden of its large population into a strategic advantage by changing its economic growth model from a resource-intensive one to a knowledge-intensive one.

The essence of lifelong learning is to provide opportunities for people to learn throughout their lives. The Chinese culture has a tradition of placing a high premium on learning and on continuing education. An ancient proverb says "Never stop learning as long as you live." This was true in the past, when knowledge grew slowly and life spans were short, and it is even more relevant today when science and technology make advances on a daily basis and people live twice as long as they did a thousand years ago. To establish an effective life long learning system China needs to expand preschool education, universalize primary education, strengthen secondary education, diversify higher education, and improve the labor training market to provide more learning opportunities.

China is at a stage of development where it is experiencing rapid economic structural change. Over the last 30 years, about half of rural laborers have transferred into nonagricultural sectors, and about half have moved to the cities. This unprecedented population shift has driven China's fast-paced economic growth. However, the ensuing rapid industrialization and increased demand for skilled laborers requires an effective education and training system to quickly enhance the skills level of rural laborers, enabling them to benefit from wage increases, improved welfare, and full employment.

On-the-job learning has become an important channel for China's more than 700 million workers to absorb new knowledge and acquire the necessary skills. At the same time, the rapid transformation of the economic structure has increased structural unemployment, making training a prerequisite for the unemployed to find new jobs; and, with deepening reforms in the public sector, more government workers will be laid off and will need to be retrained. In addition to formal education, this will require a multifaceted continuing education and training system; an effective skills assessment and accreditation system; and deployment of modern information technology to expand training opportunities.

Although the overall labor supply in China is still larger than the demand, there is an emerging issue around the structural undersupply of labor. Even though China has much lower tertiary enrollment rates than do high-income countries, many college graduates cannot find jobs because of a serious mismatch between school education and social and economic demand. Formal education falls short of the requirements of a lifelong learning system in terms of teaching methods, curriculum, and pedagogies, and needs to be adjusted to respond to the new demands of economic and social development.

Nonformal education (vocational education and training) faces similar problems. Although there are numerous training programs and “certificate mills,” their fees and quality are not regulated; and a serious shortage exists of low-cost, high-quality training options for rural laborers and laid-off workers. A large number of rural surplus laborers, laid-off urban dwellers, and other unemployed people are unable to secure employment or re-employment through existing training programs.

In addition, learning facilities and methods are out of date, and modern information and communication technologies (ICTs) need to be further harnessed. International experience shows that ICTs can expand learning channels at lower cost and with greater convenience, thereby better addressing the requirements of lifelong learning. The government of China is developing satellite and broadband-based distance learning to reduce education costs, improve learning efficiency, and provide learning opportunities for poor remote regions.

China still has a long way to go in building a lifelong learning system and a learning society. The main problem is the serious shortage of investment in education and training. The government cannot bear all the costs of financing the system; and the shortage of resources has constrained the improvement in education level of the whole population.

Another significant challenge in establishing a lifelong learning system is the lack of nationwide consensus on its importance and urgency. The goal of building a lifelong learning society can be achieved only if there is a concerted effort by all stakeholders, including the various levels of governments and education authorities. This will require a more conducive environment—an open system that will encourage individuals and society to invest in education and training. The role of government needs to shift from that of key decision maker and sole provider of education and training to that of system architect, rulemaker, and promoter. The barriers that inhibit private capital from entering the education and training fields need to be lowered, while at the same time strengthening education and training by implementing an effective system of standards, quality assurance, auditing, and accreditation. This means setting up a high-quality system of information on the changing education and skill needs of the economy and on the quality of different education and training providers. It also requires establishing appropriate mechanisms to finance education and training, including the development of an effective student loan market.

Building a lifelong learning system is a cross-sectoral undertaking that entails integrated planning, coordination, and management. Currently, China lacks a unified and high-level

authority to move the agenda forward. Relevant functions are dispersed among different ministries, such as education, labor, personnel, and agriculture.

The lack of unified planning and coordination means that education and training resources cannot be shared or integrated, and limited social resources cannot be fully utilized. It is imperative to establish a high-level leading body to coordinate and integrate resources and ensure the implementation of the lifelong learning system. The main functions of such a body would include coordinating the lifelong learning units of the various educational institutions, private enterprises, nongovernmental organizations, social organizations, and local communities to improve their interaction and cooperation so that resources can be better utilized; organizing lifelong learning awareness-raising campaigns; setting up learning certification centers to assess learning and training results and issue relevant certificates; and researching and formulating regulations and laws on lifelong learning so that the lifelong learning activities can be carried out in an orderly fashion and be protected by legislation.

Given the many daunting challenges faced by China in leveraging its human resources, I believe that the analysis, examples and suggestions made in this report provide a very useful framework and some guidance to build an effective lifelong learning system in China for the 21st century.

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WBI DEVELOPMENT STUDIES

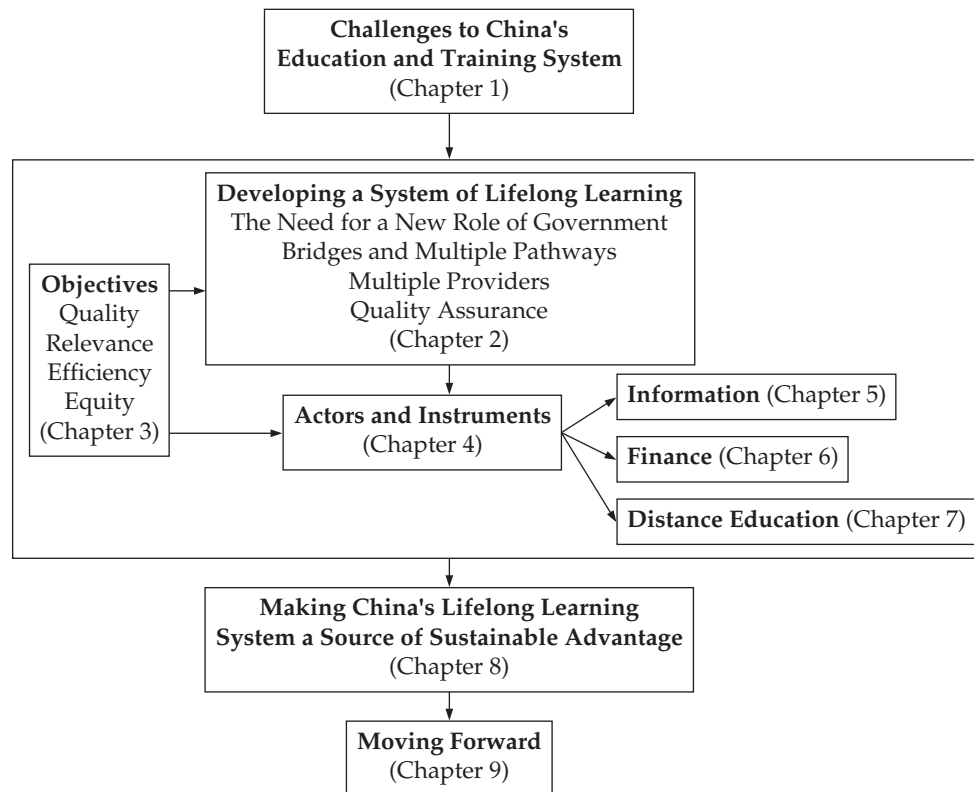
Enhancing China's Competitiveness Through Lifelong Learning

Executive Summary

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Washington, DC

Figure 1. Chapters of the report



China needs an effective system of lifelong learning for two main reasons: one, the greater importance of knowledge globally, making lifelong learning essential for enhancing China's global competitiveness, and two, the tremendous range of challenges facing education and training in China in the very demanding international environment.

Changing international environment

Globally, the speedup in the creation and dissemination of knowledge could be called a knowledge revolution. It includes the following trends:

- Acceleration in the creation and dissemination of knowledge leads to shorter time lags between invention and the application of knowledge.
- Rapid advances are occurring in information technologies.
- Reductions in transportation and communication costs stemming from technological advances are changing the organization and distribution of economic activity.
- These reductions in costs, combined with increasing trade liberalization across countries, are increasing globalization: trade as share of global gross domestic product (GDP) has increased from 38 percent in 1990 to 55 percent today.
- Increased globalization is increasing competition across virtually all markets.
- Investments in intangibles (such as education, research and development, and software) now equal investments in physical capital among Organisation for Economic Co-operation and Development (OECD) countries.

- Innovation and higher education are now more important for economic growth.
- Innovation and high-level skills are the key elements of countries' and firms' competitiveness.

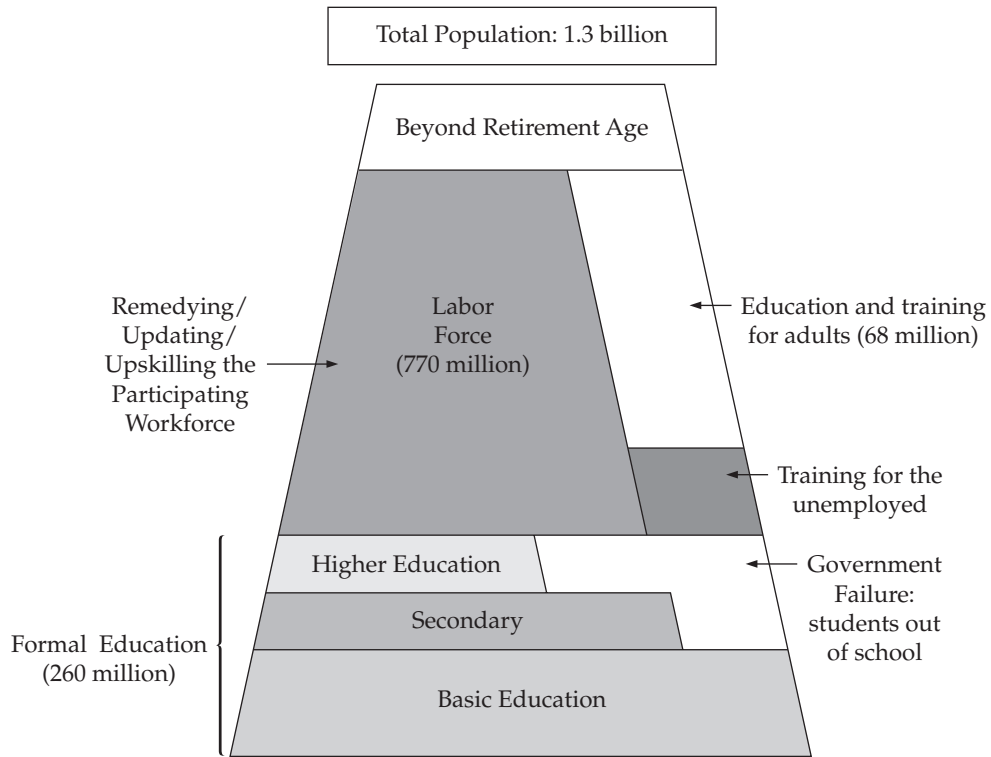
Education is the fundamental enabler of the knowledge economy. The increasing importance of knowledge has made investments in education and skills more critical for countries' growth and development. Higher average levels of education are necessary to be able to make effective use of all the new knowledge. More tertiary-level education is necessary to create and to use knowledge. In addition, worker skills have to be upgraded constantly to use new technologies and carry out new functions in this rapidly changing context. There is growing empirical evidence of the benefits of increased education, which accrue to the individuals who make the investments. They also accrue to society in terms of higher productivity and greater social cohesion.

Daunting challenges for China

The changing international landscape and China's large size and rapid growth require an effective system of lifelong learning:

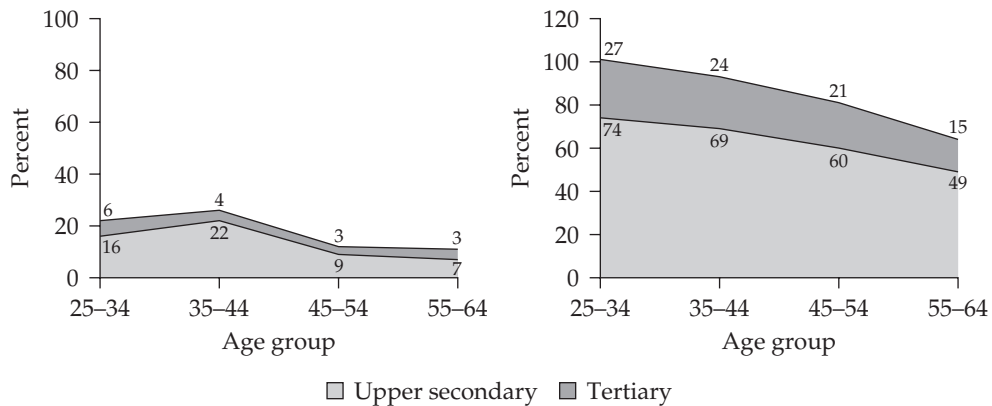
- *Competitive pressure.* China is the most globally integrated of the world's 10 largest economies. Its trade share in GDP is 70 percent, subjecting it to the tremendous competitive pressure of the global system.
- *Large size.* China is the world's most populous country, with more than 1.3 billion people. The population from preschool to the tertiary level is nearly 260 million, and the labor force of 750 million needs to upgrade its skills (see figure 2).
- *Low educational attainment.* The average educational attainment is still low at 7 years, compared with 12 years for OECD countries. The difference is very pronounced for the working age population (see figure 3).
- *Large regional, income, and educational disparities.* China is very diverse, with richer coastal provinces and poorer western provinces. The education gap between the coast and the western provinces is wide and growing.
- *Transition to a market economy.* China is still going through the transition from a centrally planned to a market economy. All kinds of new market-related skills have to be imparted not only to the students in school but also to people in the labor force.
- *Massive restructuring and rising unemployment.* Growing at 9 percent a year over the past 25 years, the economy is going through a dramatic structural transformation from agriculture to industry and services—with an estimated 10 million to 15 million rural workers moving into the cities every year (20 million to 30 million, counting their families). Millions of these rural migrants have to be trained for jobs in industry and services. In addition, 10 million to 15 million workers are being shed by state-owned enterprises each year and need to be retrained.
- *Fragmented system of education and training.* Like most countries, China has a fragmented system of education and training, with many different ministries and poor coordination across them, leading to waste and duplication.

Figure 2. China's population by education need



Source: Authors' research.

Figure 3. Average educational attainment still low, especially for the working-age population



Source: OECD 2003b.

- Financial constraints on government to address lifelong learning.* The financial resources for China to expand access to education and training and to improve quality are beyond the means of the government. Therefore, the government has to examine carefully what it must provide itself and to encourage the private sector to take on a greater share of the financing and delivery of education and training. It must also set the rules and regulations to make the whole system work effectively.

Why China needs a lifelong learning system

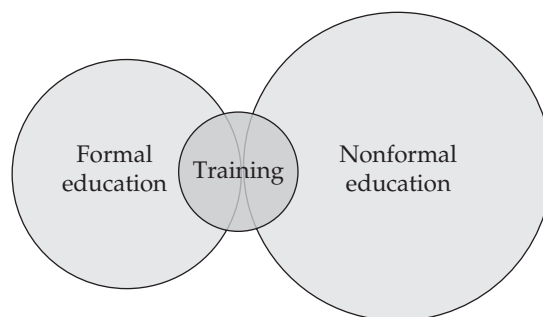
A lifelong learning system encompasses learning from early childhood to retirement. It includes formal learning (in schools and universities), training in the formal educational system and on the job, and nonformal learning (on the job, in the home, from family members or people in the community). This report focuses on formal education and training (figure 4).

Investments in education and training contribute to individual and social welfare. That is why there has been such a strong global trend not only for increased investments in formal education for the school-age population but also for increased levels of education and training for persons older than the usual school-age cohorts. Adults are returning to get higher formal education degrees. They are also seeking further specialized training from the formal education system and their places of employment—as well as from all kinds of new specialized education and training providers, both public and private.

The United States has developed a very dynamic knowledge-based economy, thanks to both its global leadership in innovation and a very large and flexible education system that permits persons to constantly upgrade their skills. Europe is moving toward a knowledge-based society and economy. It sees that access to up-to-date information and knowledge and the motivation to use them intelligently are becoming “the key to strengthening Europe’s competitiveness and improving the employability and adaptability of the workforce.”

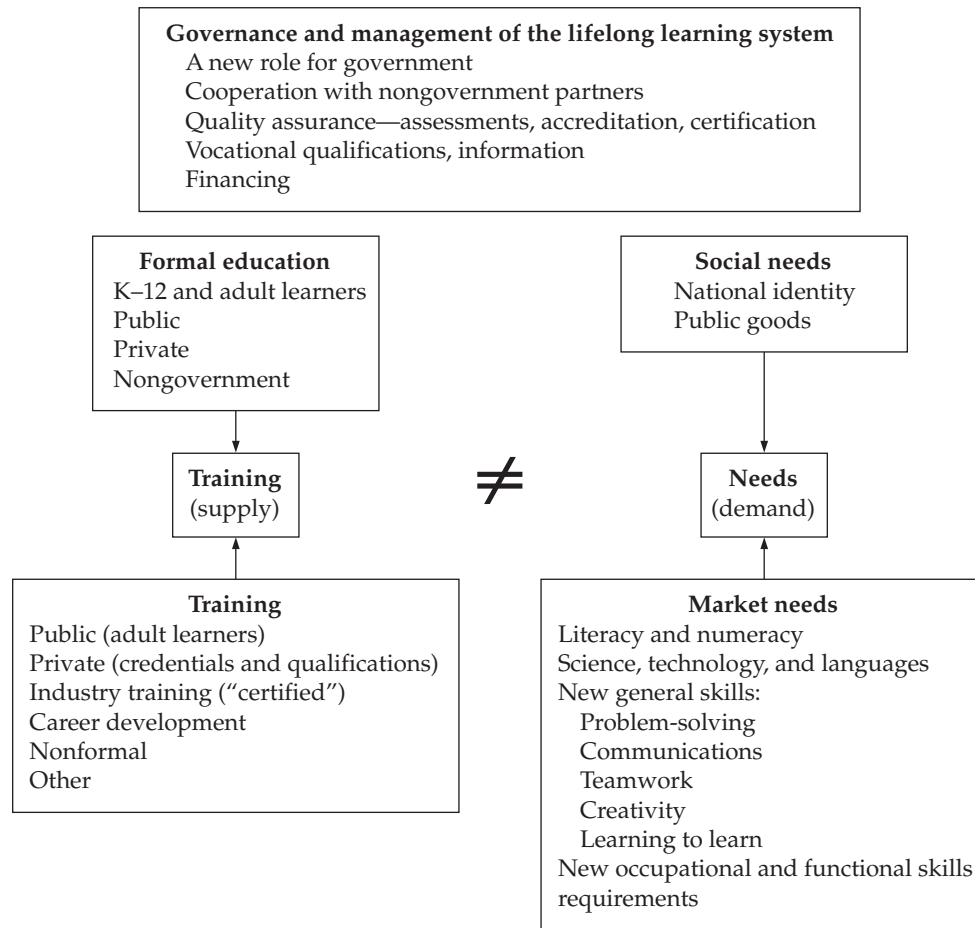
China has made very impressive advances in expanding access to education at all levels, as well as in putting in place programs to train agricultural workers migrating to work in cities and to retrain workers laid off from state-owned enterprises. However, given the more competitive global environment and the constant restructuring necessary to stay competitive, China needs to develop a more effective system of lifelong learning, as a means of ensuring competitiveness, as well as social cohesion and welfare. China has a very fragmented and inefficient system of education and training and is facing very large demands to increase access and quality. Taking into account both formal education and the need to constantly upgrade the skills of persons already in the labor force, about two-thirds of the Chinese population will be involved in education and training. To reap economies of scale and synergies and to avoid duplication, China needs to develop a more integrated system with appropriate bridges and interfaces between its different parts.

Figure 4. Lifelong learning



Source: Author's research.

Figure 5. Lifelong learning from a demand and supply view



Source: Authors' research.

This book outlines the key elements of such a system, with a primary focus on the economic aspects (figure 1). It presents a framework for understanding the demands on the education and training system and the services that various providers supply (figure 5).

On the demand side are social and economic objectives. Basic education creates national identity and develops a common educational base to foster good citizenship, moral values, and the basic skills for communicating and interacting in society. Preparing students to contribute to the growth and welfare of the economy includes traditional literacy and numeracy, critical thinking skills, communication skills, working effectively in groups, and learning how to learn.

On the supply side, the system had traditionally been dominated by public formal educational institutions, initially meant to socialize students and prepare them to enter the industrial workforce. But as the market began to require new skills, there was pressure to provide skills not developed by traditional (and usually rigid) public education systems. Private formal education institutions were more responsive to those needs. In addition, firms developed internal training programs and partnered with formal educational institutions to provide specialized courses that

met their needs. In response to the demand for specific skills, all kinds of specialized training providers arose: some are specialized public training institutions, but most are private, commercially oriented institutions.

Therefore, both the demand and the supply in education and training markets have become more complex, making the governance and overall management of the system more important. This implies a new role for government: moving from the main provider of education and training to the overall architect and facilitator of this more complex system, with thousands of nonpublic formal educational institutions and tens of thousands of nongovernment training providers.

Many providers, multiple pathways, and a new role for government

An effective system of lifelong learning has multiple providers, multiple pathways, and many stakeholders. Governing such a complex system is not easy. The government has to change from being the main provider to becoming the architect, facilitator, and rule keeper.

It has to reexamine its fundamental responsibilities and what it is best placed to do, versus what nongovernment actors can provide. It also has to work with other actors and stakeholders to assure the quality, relevance, efficiency, and equity of the system.

The government should think of its role in the lifelong learning system as substituting, regulating, complementing, and creating the market.

Substituting the market. This is the classic role of the provider of a public good, which in the first instance is free compulsory education. Despite much progress in education, the government has not fully succeeded in this. It decentralized education to the provincial and local governments, but the poorer provinces did not have the resources to finance compulsory education, particularly in rural areas, so teachers in public schools started to levy fees. This was very regressive, and many poor families could not send their children to school. In December 2005, the government acknowledged the problem and mounted a major effort to allocate resources directly to schools in poor provinces to ensure the provision of compulsory rural education. This is an excellent start, and the program should expand to ensure that children everywhere get access to free compulsory education. The government also has to finance research at universities that can carry out basic research and transform it into applied knowledge.

Regulating the market. This is another classic role for the government, which must provide the rules and regulations and the content for compulsory basic education. Working with key stakeholders, it also must put in place clear rules and regulations for private providers of education and training. In addition, it must provide the standards of quality and a process of quality assurance, including assessment, accreditation, certification, and vocational qualifications.

Complementing the market. With further growth in the private provision of education and training, the government needs to complement the market by addressing the equity issues: how to provide opportunities for qualified but poor students to realize their education potential when they cannot afford the fees for education. The government must expand a system of scholarships, grants, school and training vouchers, and tax incentives. Given the magnitude of the retraining demands for rural workers migrating to cities and for workers let go by public enterprises, the

government needs to help put in place effective mechanisms and finance to facilitate the restructuring of the workforce.

Creating the market. The government must help create an effective information market on education and training needs and on the quality of different training providers. It also must develop a strong financial market to meet the very large costs of expanding access to education and training and increasing their quality.

Ensuring quality, relevance, efficiency, and equity

Standardized international tests of quality, including IALS, TIMMS, and PISA, allow countries to benchmark themselves against others. China has not participated in any full-fledged international assessment. A pilot in China modeled after the IALS indicated a wide gap in performance between urban and rural workers, with both needing to improve their skills. China should participate in these internationally comparable tests so it can better benchmark itself and monitor its relative performance and progress.

Students are not getting an education most relevant to the needs of employers, who complain that graduates are too academic, without appropriate practical work skills. Unemployment among tertiary graduates has been rising in recent years with the rapid ramp-up of tertiary enrollment rates. Many tertiary graduates are finding that the skills acquired at university are not relevant to the needs of the market.

Other countries show that beyond literacy and numeracy, the market is looking for computer, problem-solving, and communication skills and the ability to work in groups. Content thus has to be updated, and new skills have to be taught, including learning how to learn, because everyone needs to become a lifelong learner. Also, because many of the new skills are best learned outside the school environment and in the work environment, teaching has to change.

The efficiency of an education and training system depends on the amount spent per student, the efficiency of that spending, and the effectiveness of teaching and pedagogical techniques (table 1):

- China is on target for its income class, with an average of 21 students per teacher in primary school, relative to the median of 42 for low-income countries (and to 41 in India). In primary completion rates, China seems to be performing slightly above what would be expected for its income class.
- In public expenditures on secondary education as a percentage of GDP per capita, China also appears to be spending roughly the same as its income class, at about 14 percent of average per capita GDP, but lower than the median of almost 20 percent for upper-middle-income countries.
- In public expenditures on higher education, however, China appears to be overspending: its average per student is 65 percent of its per capita GDP versus the median of 30 percent for lower-middle-income countries, 33 percent for upper-middle-income countries, and 29 percent for high-income countries. China is even more of an outlier when it is factored in that a third of higher-education costs in public universities in China are paid for through student tuitions.

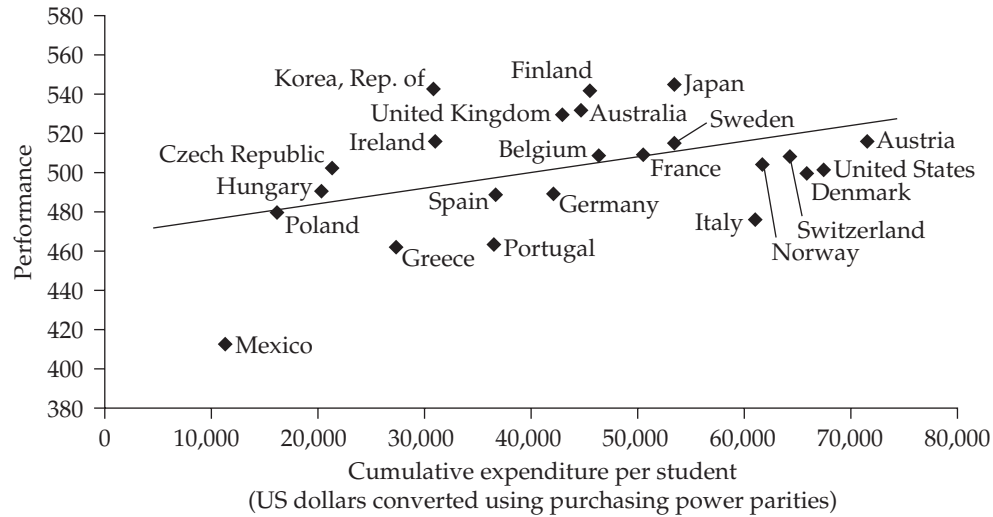
Table 1. Basic input and output indicators for education in China, compared with the rest of the world

Per capita income group in 2004	Primary pupil-teacher ratio 2004	Primary completion rates (% of relevant age group) 2004	Public expenditure per secondary pupil (% of GDP per capita) 2004	Public expenditure per tertiary pupil (% of GDP per capita) 2004
Low-income (\$825 or less)	42.0	74	19.2 ^a	163.8 ^a
India (\$620)	41.0	84	20.9 ^a	86.4
Lower-middle-income (\$826–\$3,255)	21.7	98	13.6	29.9
China (\$1,500)	21.0	99	14.0	65.8
Upper-middle-income (\$3,256–\$10,065)	21.0	96	19.6	32.7
High-income (more than \$10,065)	16.1	—	24.7	28.9
World average (\$6,329)	24.0	—	18.9	29.3

Sources: World Development Indicators 2005; China Educational Finance Statistical Yearbook 2004.

Note: — = Not available.

a. Data are for earlier year.

Figure 6. Spending per student does not ensure student performance in OECD countries

Source: OECD 2001.

Results from PISA (an international standardized student performance test given to 15-year-olds in OECD countries) suggest that excellence in education is attainable at reasonable cost, as shown by Finland, Japan, and the Republic of Korea, which perform very well, yet spend modest amounts on education. However, results for Austria, Switzerland, and the United States, which spend much more, show that high investments will not necessarily increase test scores (figure 6).

So, apart from increasing resources, the efficiency of education and training has to be enhanced by effectively deploying resources. China can do this by improving management and educational governance; reforming the curriculum and pedagogy; providing incentive-based policies (such as fair competition between public and private players); strengthening the links between education and training and the labor market; and establishing an effective evaluation system to offer solid evidence on what works, what doesn't, and why.

Administrative and institutional accountability for the resources invested in education and training is driving the development of education management information systems (EMISs), which can increase efficiency, improve resource allocation, and confirm performance. Learners and parents also require information about educational performance to make decisions and convey their preferences to local governments. An education management information system should

- ensure that comprehensive and accurate data on all aspects of the system—student performance; staff efficiency; demographic trends; and institutional, physical, and financial resource inputs—are systematically collected and processed to provide education planners with all the information required for good policy and program development;
- provide technical assistance and advice to provincial, state, and district education departments and institutions, enabling them to monitor and evaluate system performance;
- continually identify and develop more precise and accurate indicators for monitoring and evaluating all aspects of the education system;
- coordinate research, development, and training activities for such a system in collaboration with other partners in the education community; and
- secure funding support from national and international agencies for the expansion and development of such a system.

Technologies readily available today can provide an integrated management information system that is easily accessible and updatable, important for China's huge and segmented education and training market.

Turning to equity, the largest source of inequality in access to education and in educational attainment is the large difference in incomes and other measures of well-being between regions, between rural and urban areas, and between the rich and poor (table 2). Tackling educational inequality in China will require reversing regressive financing.

Table 2. Education levels of the labor forces by region, 2004 (%)

<i>Region</i>	<i>Illiterate</i>	<i>Primary</i>	<i>Junior secondary</i>	<i>Senior secondary</i>	<i>College or above</i>
East	4.1	20.8	45.6	18.0	11.6
Middle	4.5	25.7	49.3	13.9	6.6
West	14.2	35.7	33.2	10.2	6.7
National average	6.2	27.4	45.8	13.4	7.2

Source: Authors' calculations, based on data from China Labor Statistical Yearbook 2005, National Bureau of Statistics and Ministry of Labor and Social Security of China, and China Statistics Press, 2003.

Setting the rules of the game and developing effective partnerships with nongovernment players

The government must manage a large and complex system with multiple stakeholders. The stakeholders include government ministries involved in different parts of the provision of education and training (finance, education, labor, personnel, sectoral ministries, provinces, and municipalities), domestic and foreign private providers of formal education and training, students, parents, trainees, teachers, trainers, employers, banks and the capital market, and society at large.

There are various instruments to manage this system:

- *Direct provision and management of the public system.* This is the mechanism over which the government has the greatest control; however, it must put in place good management and accountabilities to make sure that the system meets the goals and objectives efficiently. The government also has to carefully consider which functions it should undertake directly because of its key role as the provider of public goods and which it should delegate to the nongovernment sector.
- *Coordination* is another critical mechanism. The government should coordinate the roles of the different parts of the national, provincial, and municipal levels of government to reduce inefficiencies and duplications. The government also has to coordinate its actions with those of the nongovernment providers of education and training services.
- *Regulation* should apply to what the different parts of government do in education and training and should clearly lay out the rules, standards, and accountabilities of the nongovernment providers, particularly the private sector. These rules should be clear and transparent.
- *Quality assurance.* Government has an important role in ensuring that there is a good system of quality assurance in education and training. Quality assurance implies that there is not only a measure of the quality of education but also a process through which to ensure quality: to get institutions that are not performing well to improve. This is typically done through “carrots” such as linking performance to budget allocations or access to special government funding (even for private institutions) or “sticks” (closing down or putting an institution on probation for a limited period, after which there may be a reevaluation).

The government does not have to carry out quality assurance directly, but it must ensure that a system of information and accountability is put in place to guarantee quality. At a minimum, quality assurance is a consumer protection device for students and the labor market to ensure that minimum standards of quality delivery are met. Given the importance of education in general and tertiary education in particular, governments and stakeholders are demanding ever more information to help inform decision making and regulation. In response, there is a growing trend for quality assurance practices to shift from more input-based approaches to those emphasizing measurement of student learning outcomes, key competencies, and operational efficiencies.

Quality assurance systems include accreditation and certification systems. The objectives are to evolve from regulating to providing guidance to institutions for quality improvements—and to promoting uniform standards of qualifications comparable across institutions and national borders.

Chinese authorities need to examine various international systems of quality assurance and consider what will make the most sense for China's specific situation. The United States has a system of regional accreditation bodies. On the other hand, the European Union is trying to create an integrated system from a collection of very disparate national (and subnational) systems. It is trying to make compatible the degrees granted in all its member countries—and to develop a system of national qualifications and equivalencies between formal and vocational education systems and vocational qualifications that include the recognition of prior learning (box 1).

Box 1. European Union: Mutual recognition of qualifications and competencies

With the further integration of the European Union, one of the major obstacles for people wanting to work or learn in another EU country, or to move between different parts of the labor market, is that their qualifications and competences may not be accepted. This is further complicated by the proliferation of qualifications worldwide, the diversity of national qualification systems and education and training structures, and constant changes in these systems. To tackle these obstacles, the European Union has introduced several instruments, aiming at facilitating the transfer of qualifications and competences for academic or professional purposes.

For transparency and recognition of degrees and qualifications for academic purposes, the network of National Academic Recognition Information Centers, created at the Commission's initiative in 1984, covers all EU and European Economic Area countries and all the associated countries in Central and Eastern Europe, Cyprus, and Malta. These centers provide authoritative advice and information on the academic recognition of diplomas and periods of study undertaken abroad. For transparency and recognition for professional purposes, a network of National Reference Points for vocational qualifications is being established in the member states and will be the first point of contact for questions relating to vocational qualifications.

The commission and the member states have developed a number of tools supporting the transfer and transparency of qualifications and skills:

- **The Diploma Supplement and the Certificate Supplement** for vocational qualifications.
- **The European Community Course Credit Transfer System** for recognition of periods of study abroad.
- **The common European format for curriculum vitae** for a simple and efficient presentation of individual qualifications and skills.
- **Europass training**, a passport indicating the knowledge and experience acquired in formal and nonformal training.
- **Common criteria and principles for quality in vocational education and training.** Advancing the work of the European Forum on Quality, a core of common criteria and principles for quality assurance, which could serve as a basis for European-level initiatives such as quality guidelines and checklists for vocational education and training, will be developed.
- **Common principles for the validation of nonformal and informal learning.** The aim is to develop a set of common principles to ensure greater compatibility between approaches in different countries and at different levels.
- **Lifelong guidance.** The aim is to strengthen the European dimension of information guidance and counseling services, enabling citizens to have improved access to lifelong learning.

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Box 1. (continued from previous page)

As part of the Bruges-Copenhagen^a process of increased cooperation in vocational education and training, the intention is to develop an integrated strategy, turning the above-mentioned instruments for transparency of certificates, degrees, and diplomas into a single, user-friendly tool. The Bruges-Copenhagen process responds to the Barcelona mandate to make European education and training a world reference by 2010. It supports the development of transparency and mutual trust as the principles underpinning improved recognition of qualifications and competences, as well as the quality of European vocational education and training, in terms of standing and reputation. This process, being developed “bottom up” with the full involvement of the social partners, will support the development of qualifications and competences at the sectoral level.

A key feature of the Bruges-Copenhagen process is that it has been developed from the perspective of lifelong learning, emphasizing the need for citizens to make use of the wide range of vocational learning opportunities available, for example, at school, in higher education, at work, or as part of a private course. The tools described above are being designed for the user, making it possible to link together and build on learning acquired at different stages of life, in both formal and nonformal contexts.

Source: European Union 2005.

a. Following the 2001 Bruges meeting of the directors general for vocational training, on November 30, 2002, the education ministers of 31 European countries and the European Commission adopted the Copenhagen Declaration on enhanced cooperation in European vocational education and training at a meeting in Copenhagen organized by the Danish presidency.

As China moves to a system that will cater to new kinds of lifelong learners, policy makers should reflect on 12 characteristics emerging internationally in successful regulatory frameworks (see box 2).

Providing the lubricant for the system: transparent information for all stakeholders

For the many parts of the system to work effectively, information is needed on changing market and employment opportunities and on the quality, performance, and offerings of education and learning providers (including international providers).

Changing market and employment needs. By 2020, China will be a more industry- and service-oriented economy, requiring a labor force with new skills and qualifications geared toward a knowledge economy (figure 7). What will those skills and qualifications be? How will teaching methods and curriculums be adapted to provide them? What will be the returns to investing in acquiring them? In addition, as the Chinese population ages and a much larger percentage is retired, what will be its education and training needs and how can they be provided?

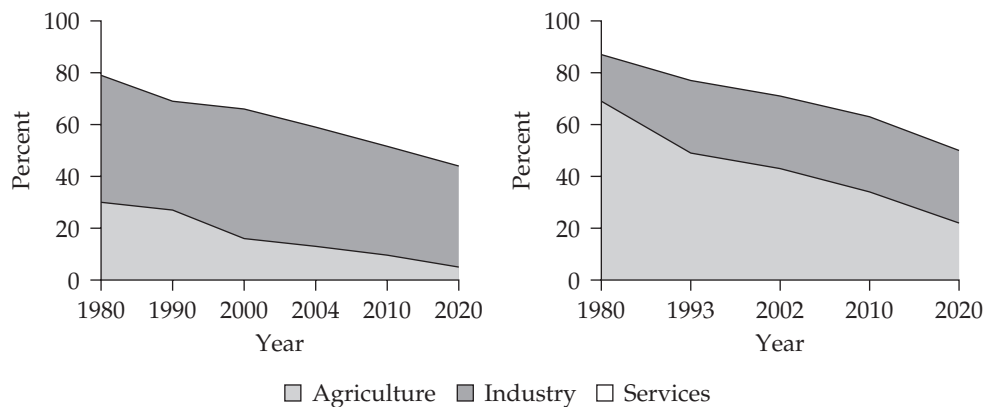
Rates of return to education. In 2000, the rate of return for a regular college graduate reached 13 percent, and that for specialized subjects (three years) 10 percent, both much higher than for senior high school (7 percent) and junior high school (5 percent). However, the returns to tertiary education relative to secondary education may be narrowing because of the dramatic increase in tertiary graduates (figure 8). Some anecdotal evidence on the increasing unemployment of college graduates and the lower-than-expected starting salaries suggest that rapidly expanding supplies

Box 2. Twelve characteristics of successful regulators

1. Accommodate program flexibility and foster career pathways for working adults and for the unemployed, from entry into the workforce and beyond.
2. Cater to apprentices and different kinds of lifelong learners, where all age groups can benefit.
3. Facilitate equity through blending financial subsidies and grants with financing on market-driven terms.
4. Provide incentives for private sector investment and participation.
5. Permit academic and vocational education and training to be modular and flexible—and certified credits to be transferable nationally across institutions and provincial borders, as well as into higher studies.
6. Accredite education and training institutions, public and private, with both accorded equal treatment by education-accrediting authorities.
7. Foster higher-order thinking, competency, and skills-based training.
8. Improve knowledge and assessment standards and national competency standards and qualifications through greater industry participation—and less government control.
9. Encourage equal or majority private sector representation on national and regional industry training advisory councils, where private employers are key stakeholders.
10. Have government or subgovernment authorities ensure that private sector advisory groups in academic education and industry training councils in technical and vocational education and training (TVET) implement and maintain effective quality management systems.
11. Establish an effective registration and accrediting body for licensing public and private academic and TVET institutions on equal terms.
12. Require minimum experience or qualifications for approved education and training providers.

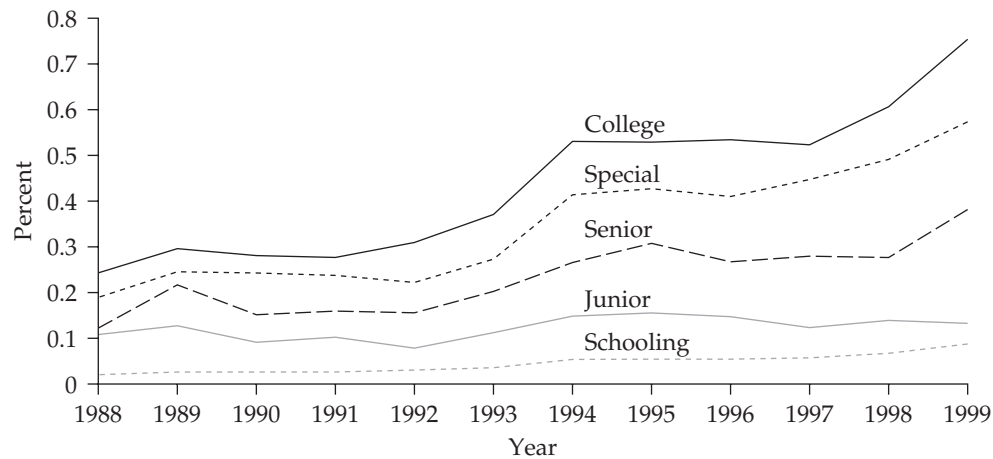
Source: Perkinson 2006.

Figure 7. Industry and services will dwarf agriculture in 2020



Sources: China Statistic Yearbook 2005; World Bank DDP database; World Bank 2003.

Note: Figures for 2010–20 are projected based on authors' estimates.

Figure 8. Returns to schooling, 1988–99

Source: Park and others 2003.

Note: For specific school levels, the reference is primary school or less. For example, as seen above, in 1999, other factors holding constant, a senior high school graduate earned 37 percent more than a worker with primary school or less. "College" stands for university and college, "special" for technical school, "senior" for senior high school, and "junior" for junior high school.

may not be matching the rapidly changing needs of the economy. Many students whose families made great financial sacrifices to send them to college report that they cannot get the salaries they expected when they started their tertiary studies.

The relative wage differential across provinces and occupations is also changing rather rapidly. Good and timely information can help people choose whether to invest and what to invest in. As part of developing an effective lifelong learning system, China must develop a better system of vocational and career counseling. This system must not only have more up-to-date information on changing career opportunities, but also more trained professionals who can help students and trainees make better informed choices.

Information on quality of education and training providers. There is also an urgent need to provide more reliable information on the quality of schools, universities, and training providers. There are various models of the types of information that are available in other countries to help students and their families select which schools and universities to attend. Putting this information in the public domain also places pressure on the institutions to improve their quality. Similar information should also be developed on the quality of various training providers. This information is important not only for the trainees but also for the government and employers. It is also important for the financial market that must be developed for education and training.

Financing the system

Current education expenditures are about 5 percent of GDP, with needs estimated at 6–9 percent of GDP. Public spending on education in China has remained more or less constant at about 3 percent of GDP, less than half of what is required, and low by international standards (table 3). It is even lower as a share of GDP now that China has revised its GDP estimates upward by nearly 20 percent. The government

Table 3. Public education expenditures, various countries and regions, 2000–03

	India	China	South and East Asia ^a	Latin America and the Caribbean	United Kingdom	United States
Population (millions)	1,000	1,300	600	520	60	280
Public education expenditure (\$ billions)	16	45	18	94	72	480
Share of budget (%)	0.7	2.0	0.8	4.2	3.2	22
Public education per expenditure per 10 million population (\$ billions)	0.16	0.36	0.3	1.8	12	17
Share of GDP (%)	4.1	2.8 ^b	3.0 ^c	4.3	5.3	5.7

Sources: Perkinson 2004.

Note:

a. Except China and India.

b. Data are for 2004.

c. East Asia only.

should thus consider increasing its share, focusing on compulsory education and on some aspects of higher education (those not so attractive to the private sector, including basic research) and training. It should pass to the beneficiaries a greater share of the costs of education and training for areas where private returns are closer to social returns—professional tertiary education and firm-specific training.

To finance the massive expansion of public education, particularly at the tertiary level, the government has had to resort to charging students increasingly higher tuitions. It is estimated that 30–40 percent of the costs of tertiary education are now financed from nonpublic sources, with tuitions accounting for the bulk of it. While commendable, it appears that China may be reaching the limits of increasing tuitions in public institutions, compared with OECD countries, but not necessarily with other Asian countries (table 4).

Considering pent-up demand, China has great potential and great need to deploy private resources for tertiary education. One estimate suggests that annual demand for higher education in China will grow from 8.1 million students in 2000 to 44.6 million in 2025. In 1999, the tuition cost was 42 percent of GDP per capita—for urban residents, it was 47 percent of disposable income, and for rural residents, as high as 125 percent.

For students and workers who cannot afford the increased public fees or the costs of private providers, China has developed a system of scholarships and grants, but it is not sufficient to cover the needs of qualified students. China has also begun to experiment with some school vouchers for basic and secondary education and for colleges, with encouraging results. It has several tax credit schemes as well, focused primarily on enterprises and on the massive restructuring schemes. They need to be improved and expanded.

Given the very large financing needs and the fact that beyond compulsory education, more education gives students higher incomes, there is a need to further strengthen the student loan market. China started to develop a student loan market in 1986. According to data from 2002, the student loan system is covering (at most) 29 percent of low-income students, and the loans are still small relative to the costs

Table 4. *Shares of public, private, and household expenditures on tertiary education, selected Asia-Pacific countries, compared with the OECD mean, 2002 (%)*

Country	Expenditure on tertiary education by source		Share of household expenditure in total
	Public	Private	
<i>Developed countries</i>			
Australia	48.7	51.3	33.7
Japan	41.5	58.5	58.5
Korea, Rep. of	14.9	85.1	63.8
New Zealand	62.5	37.5	37.5
United States	45.1	54.9	38.9
<i>Developing countries</i>			
China ^a	53.4	46.6 ^b	30.8
India	77.8	22.2	22.2
Indonesia	43.8	56.2	49.4
OECD mean	78.1	21.9	18.5

Sources: OECD 2005; OECD 2003a; China Educational Finance Statistical Yearbook 2004.

Note: a. Data are for 2003.

b. Includes revenue from public school-affiliated enterprises and public schools' contracting services that are invested in education. If such revenue is excluded, China's private funding accounts for only about 33 percent. The portion from social groups, private investors, and donations, which is actual private revenue, accounts for only 2.1 percent of all tertiary education in 2003, while tuition and fees account for almost 31 percent.

of education. The default rate is estimated at 10–25 percent. China thus needs to do more to develop a stronger and more efficient loan market. This will require a more effective information system on students and a more effective tax system. Beyond this, the government must do more to insure student loans, develop a secondary market for those loans, and eventually also develop education finance bonds, for both public and private providers.

Harnessing the potential of distance education

Given China's huge needs and geographical dispersion, there is a great potential for distance education. In China today, in addition to the 260 million students in the formal education system, there are almost 300 million adults who are illiterate (with just basic education), plus millions of unemployed people and rural migrants, all of whom need training of different types and degrees. All these people (excluding the students in schools) account for more than 40 percent of the total population.

In addition, to meet the skills demand from rapid economic and employment structure changes caused by the fast economic growth, the Ministry of Education estimated that from now to 2050, about 25 million to 30 million people per year need to get various types of continuous education or on-the-job training. This is a daunting task that the traditional means of education cannot fulfill.

Moreover, besides the huge size of the country as a whole, each province in China is (on average) the size of a medium-size country, where people are scattered in different areas, making travel and face-to-face meetings very expensive

and unrealistic in some cases. Such a huge geographical dispersion makes distance education a very effective and powerful tool to deliver education and training.

China must seize the opportunity to take full advantage of the information and communications technologies (ICT) revolution in developing its distance and Internet-based learning to expand its education and training capacities for the whole society. China already has the world's largest system of radio and TV universities, which by the end of 2005 produced about 4.25 million graduates with higher-education diplomas, about 12 percent of all higher-education graduates, and 25 percent of all adult higher-education graduates. More than 1 million graduated with secondary professional degrees, plus 40 million with continuing education, in-service training, and nondegree education. Among them were 2.6 million teachers and 1 million principals of primary and secondary schools.

By the end of 2004, more than 3,300 distance-learning centers were established by authorized colleges and universities outside their campuses, and by 2003 the Ministry of Education approved 68 higher-education institutions to establish distance-learning schools as pilots, all of them public. They enjoy substantial autonomy in their distance-learning initiatives—they may set up admissions standards and quotas, offer programs outside the official subject catalogue, and award certificates. By 2004, they had recruited 839,000 students, opened 10 fields with 153 concentrations, and designed several hundred courses. Cumulatively, by the end of 2004, more than 3 million students had registered in these schools, and more than 1.9 million had graduated from them and various other Web-based public and private programs. In 2004, China had 2.4 million students enrolled in distance-learning tertiary education, about 11 percent of all tertiary students that year.

One of the main obstacles has been the cost of converting traditional materials to those that can really exploit the potential of this new technology. China has already begun to develop various applications of Internet- and satellite-based distance education. Because it can amortize the costs of the investments in developing digital content over so many users, distance education can be very cost-effective. Many lessons can be learned from other countries such as Canada, the United Kingdom, and the United States, which have been using Internet-based education for some time. Large private companies (for example, Cisco) and private universities (for example, Tecnológico de Monterrey in Mexico) have developed sophisticated Internet teaching pedagogies. All these experiences will inform how to set up an efficient system in China and the roles of public and private providers and certifiers.

China probably has the greatest need and potential to fully exploit distance education as a major instrument to contribute to the development of an effective lifelong learning system. Building a framework that would shift distance learning (e-learning) to the mainstream and maximize its impact is the priority. The government can facilitate better knowledge management for e-learning by

- disseminating good (and lessons from bad) practices to stimulate innovation, avoid wasteful duplication, and scale up promising experiments;
- encouraging appropriate staff development, collective and individual;
- supporting research and development on learning objects and other promising pedagogic innovations;
- exploring issues surrounding intellectual property in e-learning; and
- promoting a dialogue between information technology providers and institutions and supporting public-private partnerships to keep costs reasonable.

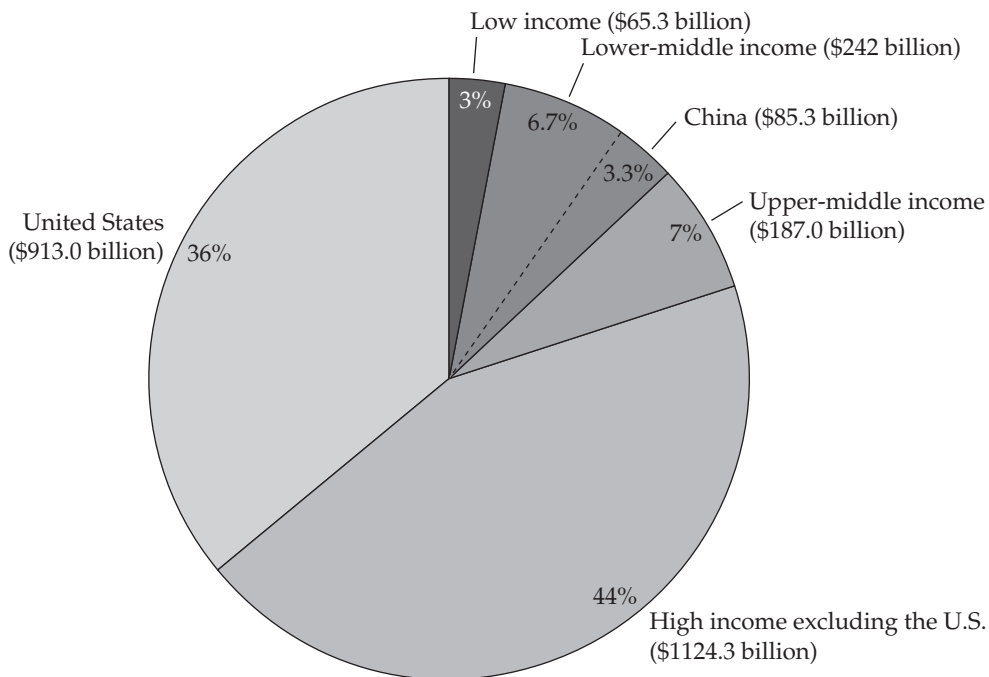
Making China's lifelong learning system a source of sustainable competitive advantage

In value terms, China's education system is just 2 percent of the world's (figure 9); however, its share of students from the primary to the tertiary levels is 17 percent of the world's. As China continues its rapid growth and improves the reach and quality of its education and training system, it will have the world's fastest-growing education and training market, increasing its share of the world's value to 17 percent within the next 10 years.

To turn this challenge into an opportunity, China must take advantage of economies of scale and scope. It must benchmark its system to monitor progress in comparison with other countries. It must take advantage of relevant pedagogy, content, management, new business models, and quality assurance systems available from other countries. It should also exploit the contribution of foreign education and training providers in China through distance education, faculty and student exchanges, franchises, joint programs, and the establishment of foreign universities in China through foreign direct investment or joint ventures.

China should systematically exploit the benefits of the 600,000 Chinese who have gone for studying and training abroad. China accounts for 13 percent of the 2.1 million students studying outside their home country in OECD countries, with tuition payments of about \$2 billion. If China strengthened its domestic higher-education system, it could capture a share of this forgone income and invest it in further strengthening its domestic system. China should also tap the global demand for foreign education and training by catering to foreign students and trainees. Now hosting more than 60,000

Figure 9. China has about 3.3 percent of global spending (\$2.5 trillion) on formal education, 2003



Source: Authors' calculations based on World Bank and UNESCO data.

foreign students, China could increase this number and benefit from the revenues to strengthen its system. More foreign students in China would also enhance understanding of China in the world. China could become a global education and training hub—a source of sustainable competitive advantage.

Moving forward

The challenges of building China's lifelong learning system are immense; however, so are the opportunities of drawing on the experience of other countries and on the potential of new pedagogical techniques, new information technologies, and new providers. What is necessary to make effective use of this potential is to sketch out the broad outlines of the larger system and to try to get a more coherent and integrated approach to exploit synergies; reduce mismatches; improve efficiency, flexibility, and relevance to changing needs; and address equity issues.

China is trying to build itself into a learning society in which all people pursue lifelong learning. In many areas, China's needs are unique because of the size of its population and because of some of its special circumstances, not least of which are the speed of economic and social changes and the tremendous diversity. These are the main tasks:

Put in place systems and institutions that self-adjust to rapid change. The first step of building the lifelong learning system is establishing a coherent policy framework, a sound regulatory environment, a coordinated governance process, a timely and reliable information management system, and a dynamic link with the evolving global system. Only if these systems and institutions are in place will the lifelong system function effectively and adjust itself to the changing world. And only with a well-articulated vision and strong commitment from top leadership can a coherent and integrated policy framework be established for lifelong learning.

Develop a coherent policy framework. Because lifelong learning is a systemic undertaking involving various stakeholders (including the government, private sector, civil society, and so forth), a coherent and well-integrated policy framework will be the key for the system to operate smoothly and efficiently. The role and responsibilities of each stakeholder should be clearly defined so that concerted efforts and the limited resources can be effectively deployed. One way to achieve this is to increase the transparency and inclusion in the governance and policy-making process. Transparency can be interpreted as openness about policy intentions, formulation, and implementation and the absence of corruption. Various stakeholders should be involved and consulted in the policy-making process so that a consensus is reached among them regarding their relevant roles, the major issues in education and training, and the policy instruments needed to tackle them. An information campaign is necessary to make sure that all the relevant parties understand what a lifelong learning system is, its importance for moving toward a knowledge-based economy, and what it takes to build such a system. Strong commitment from the top leadership and a well-articulated vision are crucial for a concerted effort. Only through such a process can a coherent and highly integrated policy framework for lifelong learning be established.

Provide appropriate governance. Guided by a sound policy framework, an enabling regulatory environment must be built to govern the various areas of lifelong learning. Today, the government is still the main provider and controller of education and training. The private sector is still highly constrained, although China has

passed the private education law. To embark on the huge challenge of providing lifelong learning with limited resources, the government should act as the system architect and focus on providing rules, regulations, guidelines, and procedures. It should take responsibility for compulsory education and train rural migrants and workers laid off from state-owned enterprises. It should also train high-level human capital for the innovation system. Other tasks should be left to the market. To strengthen the regulatory regime, the government should do the following:

- Define clear divisions of responsibilities among different levels of governments, making sure that expenditure responsibilities are matched with revenue assignments and strengthening community participation. International experiences show that giving parents, teachers, and other stakeholders decision-making authority in key areas such as curriculum, training, and pedagogical approaches improves student performance.
- Encourage private provision of education and training. To unleash the potential of the private sector, government must provide better legal protection of private schools, fully enforce the private education law and regulations, define clear rules on some critical issues (such as profit and tax), create a level playing field for private investors, and assure their quality through a proper assessment and recognition system.
- Develop a robust national accreditation, certification, and qualification system that can provide quality assurance for education and learning, both formal and nonformal. Such a system can help revamp the education and training system according to the market needs and requirements of a knowledge economy.

Integrate with the evolving global system. China's lifelong learning system must be plugged into the evolving global system to keep itself updated. Learning has no boundaries. Emerging good practices, pedagogies, techniques, and governance and financing experiences can be shared globally.

Developing a process for carrying the task forward

Increase awareness. A series of educational campaigns (including high-level workshops and conferences), broadly reported by various public media, would help disseminate the idea of a learning society or learning economy and help people understand what a lifelong learning system is and why and how to build it. Another way to get lifelong learning into the spotlight is to conduct a national benchmarking exercise for measuring outcomes.

Get greater stakeholder buy-in. A nationwide consultative process must be conducted to generate a consensus across various stakeholders in the lifelong learning arena. The process should be launched from the top, such as the Premier's Office or the State Council, with broad participation of private firms, educational and training institutions (both public and private), think tanks, civil society, and public media.

Improve the instruments. The following key areas require special effort:

- *Regulations for the private provision of education and training.* Important here are profitability, legal protection, and fair competition with the public sector.

- *A national qualification, accreditation, and certification system.* The core of a lifelong learning system, this must be built through concerted efforts of various parties. An important element is how to recognize informal or nonformal learning.
- *Links with the labor market.* The mismatch between the supply and demand of education and training has created significant waste of limited resources and increasing unemployment of college graduates.
- *Sound information.* Timely and accurate information is needed on regulations, market demand, skills forecasting, vocational guidance, quality of education and training providers, rates of return, and employment prospects.
- *Education financing market.* Although China already has a student loan market and many financial aid programs, they are not functioning very well nor are they large enough to address the huge need. In addition, many financial instruments such as performance contracts, vouchers, tax incentives, and competitive grant funding are not adequately deployed. In addition, in the longer term, China needs to develop a broader education finance market, including education bonds to finance public and private educational institutions.

How can China learn from its own experiences and from those of other countries?

Monitoring and evaluating domestic programs. To ensure the effectiveness and proper implementation of various lifelong learning programs, it is crucial to establish a nationwide monitoring and evaluation system to feed the lessons from pilots and experiments back into the design and expansion of these programs.

Piloting and scaling up. To make the lifelong learning system truly functional and effective, some pilots can be conducted in various regions to test approaches and gain experience before moving to scale.

Learning from other countries. Although there is no ready recipe for China to adopt in building a lifelong learning system, many successful experiences all over the world could be adapted, localized, and applied in a flexible way. China needs help especially in governance; private sector development; distance education; information services; certification, accreditation, and qualification frameworks; financing (especially various financing instruments beyond the public funding); and massive retraining (particularly for rural migrants and those laid off).

Developing processes for constant adjustment and improvement. Almost all countries—developed and developing—are struggling to make their education and training systems more responsive to today's needs and to tomorrow's. This requires a flexible and sound institutional framework that allows for timely reflection of the changing demands of the economy and society and for improvements to the existing instruments and programs.

To build such a system, institutions need the autonomy to take responsibility for their own evolution and improvement in response to learner needs. That system should be open enough to constantly absorb, adapt, and apply new and successful experiences—globally and locally.

Conclusion

The ongoing knowledge revolution, intensified competition after the World Trade Organization accession, and rapid economic growth, as well as more diversified and higher demands for living, have put an immense premium on education and learning in China. Only a well-established, highly integrated, and effectively functioning lifelong learning system can fulfill the increasing demand for skills and high-quality human capital. This will require a concerted and highly coordinated effort among all the key stakeholders, a sound incentive and institutional framework, and the optimal use of limited resources.

This report has summarized some of the key trends in the global environment and in the global education and training market to provide some context to the challenges that China is facing as it modernizes and integrates further into the global system. It has argued that China needs to develop a coherent lifelong learning system and has attempted to outline the key issues that China must address as part of such a system in the Chinese context.

However, the issues and recommendations outlined in this report are only a starting point. They should be expanded in more detail and adapted to Chinese realities. There is also the issue of funding. The government will need to set priorities carefully and efficiently leverage various resources through strong partnerships. Strong commitment from the highest levels, awareness raising with the key stakeholders, and perseverance will be the keys for long-term success.

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