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The Value of People



In the global knowledge economy, people's skills, learning, talents and attributes – their human capital – have become key to both their ability to earn a living and to wider economic growth. Education systems can do much to help people realise their potential, but when they fail it can lead to lifelong social and economic problems.


By way of introduction...

In India, Vikrant Roberts is getting ready for another day at SAP, an international software firm with a base in Bangalore. The city is India's high-tech hub, and it's changing rapidly, says the 28-year-old software engineer. "Bangalore used to be a small town kind of place. You could go for nice long walks, it was quiet. Now, it's really getting crowded. The traffic's impossible, in fact."

On any given day, Vikrant can talk over the phone to clients in Germany, the United Kingdom or the United States. Sometimes a call is enough, but he may have to get more involved: "If there's a problem in their system and they want me to log on, I can request a connection and log on to their system", he explains. Distance doesn't matter: the client's server may as well be in New York as New Delhi. It's all the same to Vikrant.

Bangalore is home to an ever-growing number of global and Indian software and information-technology companies employing educated young people like Vikrant. Indeed, some predict that in a few years it will take the place of California's Silicon Valley. Vikrant is more cautious: "India has a lot of catching up to do", he says.

Whether he's right or wrong, there's no doubt that India and other developing countries are growing rapidly and have the potential to reshape the world's economy. One famous forecast by the US brokerage firm Goldman Sachs sees Brazil, Russia, India and China – the "BRICs" – joining the United States and Japan to make up the world's six biggest economies by the year 2050. Only time will tell if that happens. But what can't be denied is this: the global economy is evolving, just as it always has done and just as it always will do.

 A key trend in this latest phase of world economic change is the rise of the knowledge economy, and that's the topic this chapter will focus on first. It will then go on to examine how the idea of investing in people has emerged as a response to economic change, and finally ask what all this means for education and how people learn throughout their lives.

How is the global economy changing?

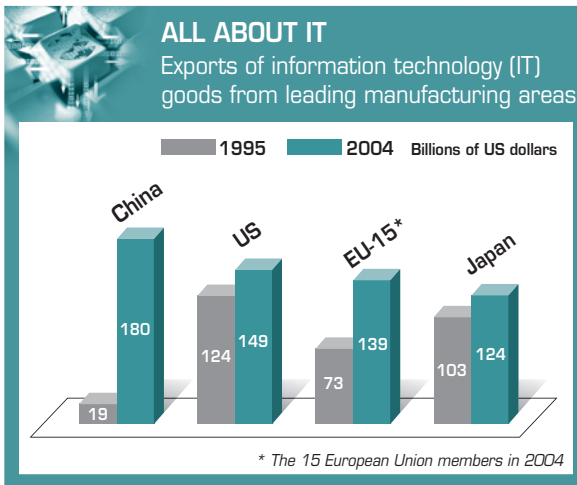
There was a time when economic strength was largely dependent on hard, physical assets: a better plough, a more efficient spinning wheel, a stronger tractor. The physical form these assets took really mattered: a plough did the work of a plough, a spinning wheel the work of a spinning wheel, and that was that.

These days, a major source of growth comes not from physical objects, but from something quite intangible: information. And the form of that information – whether it’s on a computer hard disk, an iPod or flying through the air in a satellite transmission – hardly matters. It’s all just ones and zeros.

New technology “is transforming economic activity, as the steam engine, railways and electricity have done in the past.”

The New Economy: Beyond the Hype

Equally, the location of an asset – be it Manchester, Detroit or Yokohama – was once crucial to success. A factory had to be in the right *place*, accessible by boats or trains and close to natural



China has overtaken the United States to become the world’s largest exporter of IT goods – computers, network routers and so on – which are helping to create the new knowledge economy.

Source: OECD ITS Database.

resources like coal. Today, location is less and less important. Providing the people are there to make use of the information, and the links are good, it doesn't matter much whether they're in Boston, Beijing or Bangalore.

Let's not run away with ourselves. Of course, manufacturing still relies on raw materials – iron, cotton, oil – just as it always has. And a farmer still needs to plant seeds in the ground. Manufacturing and agriculture are not about to go away. Indeed, with growing world populations and the emergence of new middle classes in China and India, demand for their outputs is rising, not falling.

Equally, information is hardly new. When the dinosaurs still walked the earth, insects like bees were using elaborate dances to exchange information about the location of nectar-rich plants. In pre-historic times, our ancestors used shouts and gestures – that is, they exchanged information – to hunt animals that were bigger and faster than any human. And long before the silicon chip appeared, fortunes were made through the sale of information: in 1865, John Julius Reuter turned his fledgling wire agency into a household name by breaking the news in Europe that President Lincoln had been assassinated.

What's different about information today is the sheer volume and pervasiveness of it and the speed at which it can be transmitted and processed. Rapid improvements in computing power and communication technologies, like the Internet, are making it ever cheaper to handle and process data. Moore's law – the prediction that the number of transistors on a silicon chip (and, by extension, computer performance) will double every 18 to 24 months – has essentially held good now for more than 40 years. Today, computers run ever faster and hold ever more information. Internet speeds, too, have risen rapidly since the days when waiting a minute or two for a new page to slowly reveal itself didn't seem unreasonable.

“The value of knowledge ... has continued to rise. It is fundamentally different from other forms of capital. As it becomes abundant, it may be further expanded more easily and cheaply, in turn creating especially lucrative returns.”

David Bloom, *The Creative Society of the 21st Century*

What's also different is that information-based activities are becoming ever more important both to national economies and individual businesses. Today, improvements in information technolo-

gies are felt in every aspect of business life, from managing warehouse supplies to monitoring sales. The pervasiveness of information technologies is reflected in company balance sheets. By some estimates, traditional book assets – essentially, the physical assets of a company that could be sold if it went bankrupt – now account for just one-fifth of US companies’ value. Much of the rest lies in intangible things like knowledge and information.

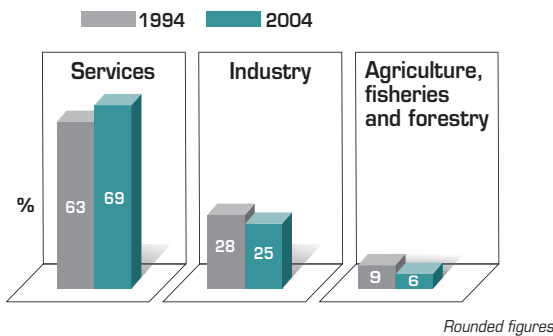
The knowledge economy isn’t just changing existing businesses; it’s creating them, too. Think of text alerts to cell phones and search engines from Google, a company whose turnover rose 17-fold in just four years to \$1.5 billion in 2005. And then there’s the more obscure new businesses: in China, young people nicknamed “gold farmers” spend their days playing video games to earn virtual gold coins, which players normally use to “buy” other virtual objects, like weapons and fortresses. But the gold farmers aren’t keeping this virtual gold for themselves. They’re selling it for real money to players in the West who want the rewards of video-game success without making the effort.

All these activities involve the sale or exchange of knowledge and information. To make it all happen takes powerful computers and



WHO'S DOING WHAT?

Percentage of workforce in the services, industry and agriculture sectors across the OECD area



OECD countries are seeing a shift from traditional jobs, such as manufacturing, to areas that don't create physical objects, like many services and the knowledge economy.

For data on all 30 OECD countries use the StatLink below

connections. But, more importantly, it takes people – people with the skills and knowledge to make it work and transform it into economic growth.

The elements of growth

Why do economies grow? If the problem's never struck you before, you're probably not alone. While we have all lived through periodic recessions and economic slowdowns, few people in developed countries today have ever known a time when the economy hasn't been growing over the long term. Translated into our own lives, that means most of us are earning more than our parents did, and that we expect our children to earn more than we do. Economic growth, it sometimes seems, is inexorable, if a little mysterious.

And yet there's no law that says economies have to grow. They can stand still, and even contract, for decades or centuries at a time. In recent times, the pace of growth has varied enormously from country to country and from decade to decade. For about 30 years after the end of World War II, western Europe came close to narrowing the economic gap with the United States. That process halted in the early 1980s, when Europe began to slip behind the United States again. These days, China's economy is growing rapidly, by about 8% a year. But there are huge differences between the economies of the gleaming, modern cities on the coasts, and those of the dusty, remote towns of western China.

Why? Why do some economies grow faster than others? That question is at the core of economics, and it's the reason why economics is at the core of modern life. Whether it's because of human greed for material goods or our desire to create a better world with good schools and hospitals for all, most of us want to see our countries – and ourselves – become wealthier.

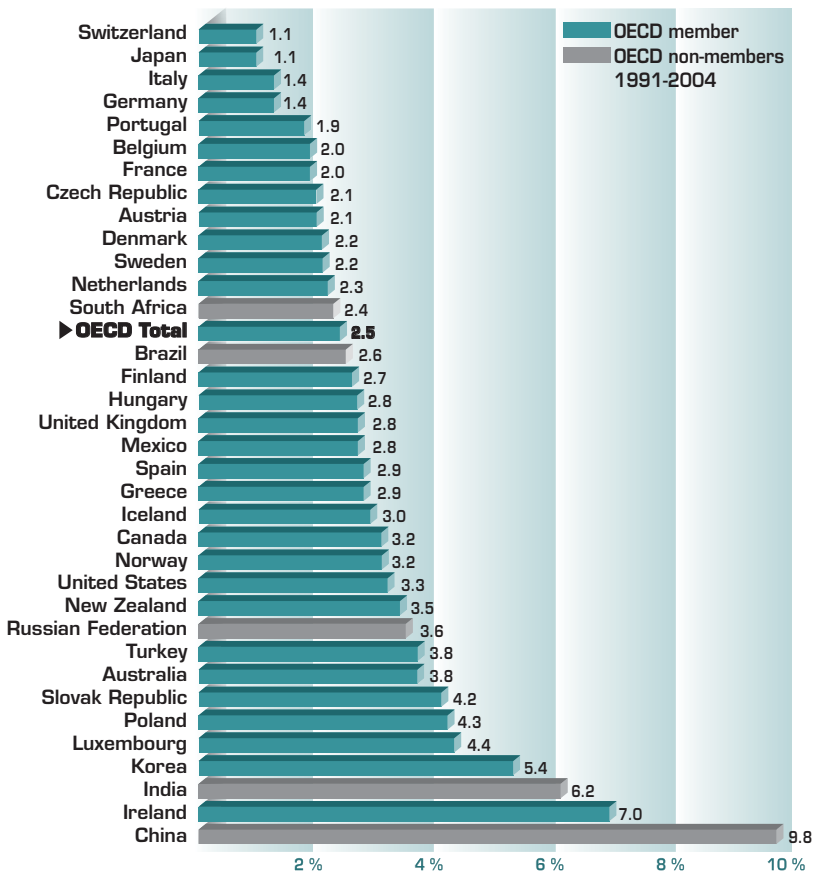
What is human capital?

To understand why economies grow, we need first to look at why economic activity happens in the first place. Traditionally, many economists believed four things – “the four factors of production” – were needed. The first is obvious: land. Without land, there would



GROWTH ROAD

Annual average growth in GDP
in OECD members and in other economies



Since the mid-1990s, growth in the OECD region has diverged, with the United States drawing ahead of most other members. There have, of course, been exceptions, such as Korea and – most notably – Ireland. But even they have been outperformed by China, which of course, is coming off a much lower economic base. Whether China can maintain its soar-away growth in the years to come remains to be seen, still, there's no doubt that countries like China, India and the Russian Federation are reshaping the world's economy.

For data in Excel™ format use the StatLink below

be nowhere to grow crops or to lay the foundations for a factory or a farm. The second is equally clear: labour, or workers. Then there's capital: that's the assets, usually money, needed to supply the bricks for a factory and the machines to fill it. And finally there's enterprise, or what the economist John Maynard Keynes called "animal spirits". In other words, the initiative that turns a bare patch of land into a factory.

Let's go back to the second of those factors of production, labour. With a few exceptions, economists originally tended to see workers as a mass. Provided they were willing and able to do physical work, it didn't really matter very much what they knew or what their abilities were. An exception to this way of thinking was the 18th century Scottish economist Adam Smith. He believed that economic activity was fuelled not by workers as a collective mass but by "the acquired and useful abilities of all the inhabitants or members of the society". An individual had to pay a price to gain such talents and abilities, added Smith, but once attained they stood as "a capital fixed and realised, as it were, in his person".

Smith's writings still influence the world we live in today. (His support for free trade makes him a bogeyman for those opposed to global trade deals. Ironically, Smith himself earned a comfortable living collecting customs payments on behalf of the British treasury.) However his belief that workers' individual capabilities were a kind of **capital** – an asset just like a spinning wheel or a flour mill that could yield returns – took a while to catch on. Although it showed up from time to time in the earlier years of the 20th century, it wasn't really until the 1960s that economists began systematically to incorporate such ideas into their work.

Explaining growth

That happened because they were trying to answer our original puzzle, why do economies grow? Classical economists, influenced by Smith, believed the answer lay in "the invisible hand". In a free market, Smith believed, people acting out of self-interest would use the factors of production and goods and services in such a way as to give each of them the best possible return. Spread across an economy, the effort of all these individuals acted as a giant invisible hand, pushing economic resources towards their most productive use.

Later economists, such as Robert Solow in the 1950s, came up with more refined, if less intriguing, solutions to the growth ques-

tion, explaining the relationships between various factors of growth – labour and physical capital, for instance – through “economic models”. Initially, these didn’t take much account of the impact of differing levels of education, or the quality of labour, on economic growth. But that gradually changed, and since the early 1960s, there’s been increasing agreement on one key part of the growth puzzle, namely, the importance of people – their abilities, their knowledge, and their competences – to economic growth. Or, in other words, **human capital**.

Like many influential ideas, human capital is hard to pin on just one person. But one of the early important exponents was the American economist Theodore Schultz. In a paper that appeared in 1961, he observed that “economists have long known that people are an important part of the wealth of nations”. No one could argue with that: after all, economists had always included labour as a factor in creating economic output.

What economists were less willing to acknowledge, Schultz pointed out, is that individuals consciously invest in themselves to improve their own, personal economic returns. A student studies medicine to heal people, but also because doctors earn more than street-sweepers; a manager trains to learn a new inventory system so she can keep up to date at work but also in the expectation of gaining a promotion and a pay rise.

Human capital is defined by the OECD as the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.

Those examples aren’t Schultz’s, but the idea behind them is. Namely, that investment by individuals in themselves – most commonly through improving their education – yields real improvements in personal income and well-being. Not only that, said Schultz, but across an economy, the quality of human capital – levels of education, standards of health – can be linked to economic growth. Essentially, what he and other economists were saying was this: a modern economy can’t grow without an educated workforce.

Rising education

Human capital – the quality of the workforce – is only one factor determining economic growth. Countries can have broadly similar educational levels, but show wide variations in their pace of growth. Other factors can include demography (especially, the ratio of young to old in a population), technological innovation, openness to foreign trade, and the state of a nation’s political and legal systems.

But human capital does play an important role in economic growth, and it is one that can be traced back to the 19th century and the rise of mass education. Like most relationships it isn’t straight-forward. Instead, there’s always been something of a push-me, pull-you effect. Education creates a workforce capable of taking on more complex and better-paying jobs. At the same time, the existence of such jobs makes it worthwhile for students to stay on in school; eventually, all those unpaid hours in the classroom will translate into a job that compensates workers for when they were learning and not earning.

“Does education spur growth, or does growth spur individuals to consume more education? In practice, it is likely that causality operates in both directions.”

Education at a Glance 2005

Equally, countries with high levels of education tend to become wealthier, so there’s more money to spend on further expanding education. That might sound like a chicken-and-egg situation but it’s probably not. Historical evidence from countries like Germany and the United States indicates that the advent of mass education around the end of the 19th century predated large-scale economic growth. (Ironically, the goal of boosting economic growth scarcely figured among the many factors that initially drove the rise of mass schooling.) In more recent years, Asia’s “tiger economies” – Singapore and Korea among others – all had relatively high literacy levels before embarking on ferocious growth spurts in the 1980s and early 1990s.

Indeed, just as a good supply of well-educated workers can help an economy to grow, its absence can be a bottleneck. Despite a population of around a billion people, India is suffering from a shortage of well-qualified graduates, according to managers in information-technology businesses. A national employers’ association predicts

VIEWPOINT

Gary Becker

Ever since it emerged, the concept of human capital has been controversial. Indeed, Theodore Schultz, a pioneer in the area, acknowledged as much. "Our values and beliefs inhibit us from looking upon human beings as capital goods, except in slavery, and this we abhor", he wrote in the early 1960s.

Almost 50 years later, the idea of human capital still isn't universally loved. For one thing, say critics, treating education and health as a form of "capital" represents an unwelcome entry by economists into what they believe should be seen as social issues. Then there's causality – does an expansion in education create wealthier societies, or do wealthier societies expand education? And then there are issues like credentialism, which raises the question of whether to some extent employers pay higher salaries to people because they have an academic "credential", such as a university degree, rather than because they have unique expertise that can improve the company's productivity.

To discuss some of these issues, we spoke to **Professor Gary S. Becker**, winner of the Nobel prize for economics in 1992 and author of *Human Capital*, a seminal work published in 1964.

Which comes first, economic growth or the expansion of education?

It's not a new question but it's an interesting question. There are various ways you try to get at that. You look at various increases in education that are based on shifts in public policy, and then you see the subsequent effects on economic growth. I definitely believe there's a strong causation from improvements in education – in human capital – to economic growth. But there is also some reverse back from economic growth to increases in education.

Doesn't the concept of human capital treat people like machines?

It certainly doesn't dehumanise individuals; you can use it to deal with all kinds of issues, not only the effect on earnings but the effect on health, the effect on family formation and so on. But it was highly controversial, even among economists. Now, I think, in most countries a politician can't run for office and at some point not mention or discuss the importance of human capital to the country.

And what about credentialism?

Yes, that's an old criticism. ... If it's simply credentialism, then as you go from the individual's [earnings] to the aggregate you wouldn't find much of an effect at the GDP level. I don't think credentialism is zero, but it's not the dominant source of the higher returns to education.

If someone's parents are well educated, they in turn are more likely to get a good education than someone from a poor family. An important issue?

I think it's very important. I think there is an important role for social policy to try to give children of poorer backgrounds and less educated backgrounds, if they have the capacities, the opportunities to extend their education. It's not an easy problem, because it's based on family structure in part, but I think we need to do a better job of at least giving those students who are able to benefit from it, better quality education at [younger ages] so that if they have the capacities they can go on and finish secondary school and go on to higher education.

Do governments need to spend more?

Yes, but it's also a question of doing better. I believe in vouchers and competition in the educational structure. The question is, are we spending it the right way, efficiently, and I think there are real questions about whether we can improve the efficiency and maybe end up spending less money and getting more results from that money.

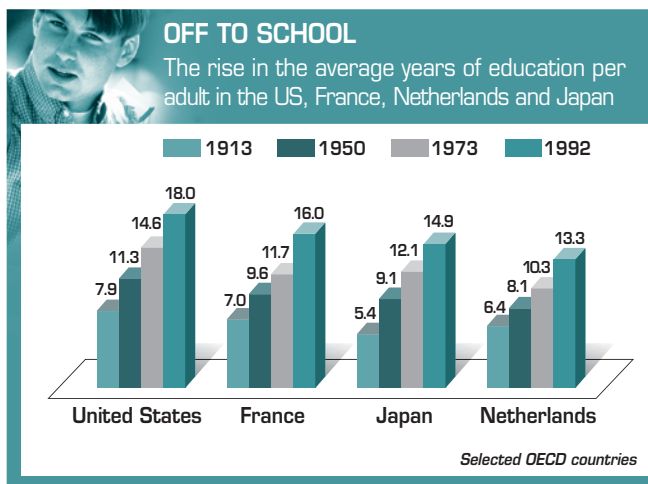
that the industry, which currently employs around 350 000 people in India, will have a shortfall of 206 000 workers by 2009. The lack of suitably qualified staff is crimping growth and pushing up salaries of existing workers.

More broadly, India's population has much lower levels of education than, say, China's. Only 61% of Indian adults can read; in China the figure is more than 90%, says UNESCO. That gap is one of several factors commonly cited for China's faster pace of economic growth since the early 1990s.

Returns to learning

What are the economic benefits of human capital? There are two ways to look at them – from the perspective of the individual and of the national economy.

For individuals, the economic benefits of human capital – such as increased earnings – have to be balanced against the cost of acquiring that capital in the first place. Those costs include the money they weren't earning when they were in education as well as the price of education itself – school and university fees, and so on. In many countries, this doesn't come cheap. Families may make big



Student numbers have been rising in many countries since the 1800s. UNESCO estimates there were 500 000 students in universities worldwide in 1900. A century later, the figure was around 100 million.

Source: *Monitoring the World Economy 1820-1992.*

sacrifices to send young people to university, while graduates may still be paying off student loans years after starting work.

“In all countries, graduates of tertiary-level education earn substantially more than upper secondary and post-secondary non-tertiary graduates.” *Education at a Glance 2006*

Usually, all this investment will eventually pay for itself. Indeed, it isn't even necessary to go all the way to university to enjoy economic benefits from education. For instance, someone who completes the full course of secondary education (typically, leaving education at about the age of 18), is more likely to have a job than someone who only finishes lower secondary education (leaving school at around the age of 15 or 16). Of course, third-level graduates have even higher rates of employment than those who only complete secondary school.

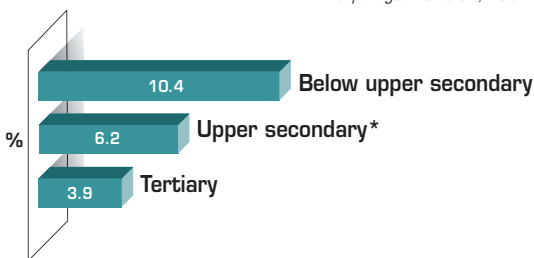
And then there's income. Here, once again, the higher a person's level of education the better they do in economic terms, a situation that holds right across the OECD area. In Norway, for instance, university graduates enjoy a 26% earnings premium over people who only finished secondary school; in Hungary that figure rises to 117%.



WHO'S NOT WORKING?

Percentage of people at each level of education who are unemployed across OECD area

People aged 25 to 64; 2004



* Includes post-secondary vocational-style education.

The risk of unemployment declines, sometimes dramatically, as people gain more education. In the Czech Republic, 23% of people who failed to finish secondary school are unemployed against just 2% of university graduates.

For data on all 30 OECD countries use the StatLink below

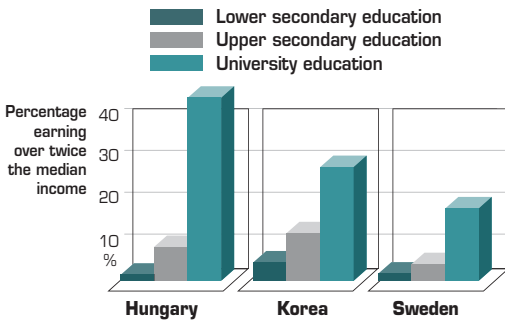
What do these higher earnings represent? In a word, productivity. In the real world, productivity can have an almost judgemental sense. If we speak of one colleague as being less productive than another, it may be just a polite way of saying he isn't pulling his weight. Economists use "productivity" in a rather different way.

Simplifying somewhat, productivity represents the economic value of what is produced by a worker (or a piece of land or any form of capital). Higher productivity also tends to fuel economic growth, which brings us on to the wider economic benefits of increasing human capital. Even though economists have long believed that there is indeed a link between education and economic growth, calculating the scale of that impact hasn't been easy. Human capital, after all, is only one factor – albeit an important one – influencing growth. But a consensus has tended to emerge that the link between human capital and growth is real and significant. This has been backed up by some numbers from the OECD that show if the average time spent in education by a population rises by one year, then economic output per head of population should grow by between 4% and 6% in the long run.



EARNINGS POWER

How graduate earnings compare with those of people with lower levels of education



University graduates have above-average earnings. Equally, people who complete secondary education (usually leaving school around age 18) earn more than those who leave school earlier.

For data on more OECD countries use the StatLink below

Source: Education at a Glance 2006.

StatLink: <http://dx.doi.org/10.1787/815010258467>

Broader benefits

Economic growth is only part of the human capital equation. Education brings other benefits to the individual, too: people with more schooling are more likely to volunteer for community groups, like women's associations and parent-teacher groups. They're also more likely to enjoy better health: they smoke less (an extra year of education means that an average woman will smoke 1.1 fewer cigarettes a day), and exercise more (an extra 17 minutes a week for every extra year in school).

“The non-economic returns to learning, in the form of enhanced personal well-being and greater social cohesion, are viewed by many as being as important as the impact on labour market earnings and economic growth.”

The Well-being of Nations

Indeed, good health can itself be regarded as a part of human capital, although clearly people can't always invest in it in the same way as they do in education.

What are the challenges for learning?

Education has been expanding relentlessly in OECD countries, and elsewhere, for longer than most of us have been alive. Many, if not most, OECD member countries have now been providing a basic primary education to all citizens for at least a century, while the roots of widespread secondary education date back 50 years. And, since the 1970s and 1980s, access to universities has grown dramatically in much of the OECD area.

This expansion has come about for many reasons. Economically, there has been pressure to provide an increasingly well-qualified workforce to meet the demands of business. Socially, changes in the structure of OECD economies have cut job opportunities in manufacturing and trade for young people. Education has, to some extent, provided a way to keep young people off the streets. Less cynically, since ancient times societies have recognised education's wider role and benefits. Education instructs the individual in the ways of his or her society, but it can also open minds to new ways of thinking.

As the poet W.B. Yeats wrote, “Education is not the filling of a pail, but the lighting of a fire.”

“Throughout the two centuries since the first industrial revolution, upper secondary education systems have had to respond to a series of changes in society and in national economies.” *Completing the Foundation for Lifelong Learning*

Whatever the reasons for its expansion, education now eats up a large slice of spending in OECD countries – 6.3% of combined GDP, although there are big variations between countries. Iceland spends almost 8% of its GDP on education, compared with just over 3.5% for Turkey. There are also big variations *within* countries on how much is spent on children as they make their way from the sandpits of kindergarten to the lecture theatres of university. On average, countries in the OECD spend \$5 055 a year to educate a primary student, \$6 939 for a secondary student, and \$12 208 for a third-level student, but again these averages mask very big differences between countries.

The scale of modern societies’ spending on education inevitably generates heated debates over what the purpose of education should be, how it should be funded, and who it should benefit. That debate is both natural and necessary. How we learn and what we learn help shape each of us as individuals and, thus, the societies we live in. Education fuels change and, in turn, responds to social, economic and cultural change. Decisions that we take now will affect our lives, and our children’s, for decades to come.

Those decisions will be particularly crucial for young people from poorer families. As the economic returns to education rise, societies will have to ask how care and education can give *all* children the resources they need to make the most of their talents and abilities. Societies that fail in this challenge will become increasingly polarised, creating communities that are excluded from the economic and social benefits of globalisation and the knowledge economy.

Not surprisingly, education is a key part of the OECD’s work. The next three chapters of this book will look at many key issues in learning and education, such as giving children the best start in life and reducing the impact of poverty. They will also examine some solutions that policy makers are particularly interested in.

Further Reading from the OECD

➤ **The Sources of Growth in OECD Countries (2003)**

Growth patterns throughout the 1990s and into this decade have turned received wisdom on its head. For most of the post-war period, poorer OECD countries grew faster than richer ones. In the 1990s this pattern broke down. Most notably, the United States began drawing further ahead of the field from the second half of the 1990s onwards. Why has growth diverged so sharply across the OECD? How much of it is attributable to new technology and R&D? How important is education and training? Are unemployment, flexibility in labour markets and competition in product markets important influences? This publication provides a comprehensive overview of these issues and new insights on what drives economic growth in OECD countries. It builds on an earlier publication from the OECD Growth Project, **The New Economy: Beyond the Hype (2001)**.

➤ **The Creative Society of the 21st Century (2000)**

How can growing social diversity be harnessed to make for more creative societies? Three powerful forces are simultaneously

shaping the social foundations of the future: Deep-seated change in underlying economic systems, rapid global integration, and growing social diversity itself. The question is whether the three will combine constructively and lead to social progress or to another, grimmer, scenario. Does growing diversity, commendable in itself, mean we are headed for greater global and national inequality? Will access to and use of new knowledge and advanced technologies alleviate or aggravate the differences? What policies can help ensure that growing differentiation within and among societies fuels creativity, not tensions? *The Creative Society of the 21st Century* asks some hard questions, and examines the policy opportunities that need to be grasped if we are to foster sustainable social foundations for the 21st century.

➤ **The World Economy: A Millennial Perspective, by Angus Maddison (2004)**

Angus Maddison provides a comprehensive view of global economic growth since the year 1000. In this period, world population rose 22-fold, per capita GDP 13-fold and world GDP

nearly 300-fold. The biggest gains occurred in the rich countries of today (Western Europe, North America, Australasia and Japan). The gap between the world leader – the United States – and the poorest region – Africa – is now 20 to 1. In the year 1000, the rich countries of today were poorer than Asia and Africa. *The World Economy: A Millennial Perspective* has several objectives. The first is a pioneering effort to quantify the economic performance of nations over the very long term. The second is to identify the forces that explain the success of the rich countries, and explore the obstacles that hindered advance in regions that lagged behind. The third is to scrutinise the interaction between the rich and the rest to assess the degree to which this relationship was exploitative.

Also mentioned in this chapter:

➤ **Education at a Glance – OECD Indicators 2006 Edition**

➤ **The Well-being of Nations: The Role of Human and Social Capital (2001)**

➤ **Completing the Foundation for Lifelong Learning: An OECD Survey of Upper Secondary Schools (2004)**