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SOME ASPECTS OF IMPROVING HIGHER EDUCATION IN THE 21 CENTURY

We live in a fast-changing world, and producing more of the same knowledge and skills will not suffice to address the challenges of the future. A generation ago, teachers could expect that what they taught would last their students a lifetime. Today, because of rapid economic and social change, universities have to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems that we don't yet know will arise. At the beginning of a new century, there is an unprecedented demand for and a great diversification in higher education, as well as an increased awareness of its vital importance for sociocultural and economic development, and for building the future, for which the younger generations will need to be equipped with new skills, knowledge and ideals. Education contributes to the growth of national income and individual earnings. While land was the main source of wealth and income in agricultural societies, capital and machinery

became important in industrial societies. In today's information societies, knowledge drives economic growth and development.

Higher education is the main source of that knowledge – its production, dissemination and its absorption by any society. Economic growth currently depends on the capacity to produce knowledge based goods. However, the future of knowledge economies depends more on their capacity to produce knowledge through research and development rather than on knowledge-based goods. Hence, knowledge economies place greater value and accord higher priority to the production and distribution of knowledge. Higher education institutions are a major source for providing the human capital required for knowledge production. Higher education includes 'all types of studies, training or training for research at the post-secondary level, provided by universities or other educational establishments that are approved as institutions of higher education by the competent State authorities'.

Everywhere higher education is faced with great challenges and difficulties related to financing, equity of conditions at access into and during the course of studies, improved staff development, skills-based training, enhancement and preservation of quality in teaching, research and services, relevance of programmes, employability of graduates, establishment of efficient co-operation agreements and equitable access to the benefits of international co-operation. At the same time, higher education is being challenged by new opportunities relating to technologies that are improving the ways in which knowledge can be produced, managed, disseminated, accessed and controlled. Equitable access to these technologies should be ensured at all levels of education systems.

The second half of previous century went down in the history of higher education as the period of its most spectacular expansion: an over sixfold increase in student enrolments worldwide, from 13 million in 1960 to 82 million in 1995. But it is also the period which has seen the gap between industrially developed the developing countries and in particular the least developed countries with regard to access and resources for higher learning and research, already enormous, becoming even wider. It has also been a period of increased socio-economic stratification and greater difference in educational opportunity within countries, including in some of the most developed and wealthiest nations. Without adequate higher education and research institutions providing a critical mass of skilled and educated people, no country can ensure genuine endogenous and sustainable development and, in particular, developing countries and least developed countries cannot reduce the gap separating them from the industrially developed ones. Sharing knowledge, international co-operation and new technologies can offer new opportunities to reduce this gap.

Higher education has given ample proof of its viability over the centuries and of its ability to change and to induce change and progress in society. Owing to the scope and pace of change, society has become increasingly knowledge-based so that higher learning and research now act as essential components of cultural, socio-economic and environmentally sustainable development of individuals, communities and na-

tions. Higher education itself is confronted therefore with formidable challenges and must proceed to the most radical change and renewal it has ever been required to undertake, so that our society, which is currently undergoing a profound crisis of values, can transcend mere economic considerations and incorporate deeper dimensions of morality and spirituality. Achieving and sustaining quality in higher education is a tough challenge. How do we foster motivated, dedicated learners and prepare them to overcome the unforeseen challenges of tomorrow? The dilemma for educators is that routine cognitive skills, the skills that are easiest to teach and easiest to test, are also the skills that are easiest to digitize, automate or outsource. There is no question that state-of-the-art skills in particular disciplines will always remain important. However, educational success is no longer about reproducing content knowledge, but about extrapolating from what we know. Education today is much more about ways of thinking which involve creative and critical approaches to problem-solving and decision-making. It is also about ways of working, including communication and collaboration, as well as the tools they require, such as the capacity to recognise and exploit the potential of new technologies, or indeed, to avert their risks. And last but not least, education is about the capacity to live in a multi-faceted world as an active and engaged citizen. These citizens influence what they want to learn and how they want to learn it, and it is this that shapes the role of educators.

Today, however, knowledge advances by synthesizing these disparate bits. It demands open-mindedness, making connections between ideas that previously seemed unrelated and becoming familiar with knowledge in other fields. The Nobel Prize for Physics was awarded in 2010, for instance, to two UK scientists for their discovery of grapheme, a new material with groundbreaking properties and potential applications. Known for their playful approach to physics, the two researchers' breakthrough came from a 2004 experiment involving a block of carbon and some scotch tape. If we spend our whole lives in the silo of a single discipline, we cannot develop the imaginative skills to connect the dots or to anticipate where the next invention, and probable source of economic value, will come from. Yet most countries, with the possible exception of the Nordic countries, provide few incentives for students to learn and teachers to teach across disciplines.

Traditionally, you could tell students to look into an encyclopaedia when they needed information, and you could tell them that they could generally rely on what they found to be true. But today, literacy is about managing non-linear information structures. Consider the Internet. The more content knowledge we can search and access on the web, the more important the capacity to make sense out of this content becomes. This involves interpreting the frequently conflicting pieces of information that pop up on the web and assessing their value, a skill rendered essential by the appearance of the Internet. Rather than just learning to read, 21st century literacy is about reading to learn and developing the capacity and motivation to identify, understand, interpret, create and communicate knowledge. Only a few countries promote

such a broad concept of literacy in their instructional practices and assessments, but more will surely follow.

Different countries have different traditions, and the status of universities and other institutions varies from place to place. For instance, for engineering, do we compare, say, Stanford with a mainstream French university, or with a specialised school such as the Ponts et Chaussées? Are these schools producing to new employment demands? Can French, German or other European universities continue to supply skills to the likes of Siemens or Airbus, or indeed, to emerging European knowledge-based industries?

Europe must ensure that the growth and development of tertiary educational systems are managed in ways that improve access and enhance quality. And we must implement financing and student support policies which mobilise public and private funding in ways that better reflect the social and private benefits of tertiary education. Beyond that, Europe's universities will have to evolve so that their leadership and management capacity matches that of modern enterprises. Appropriate strategic, financial and human-resource management techniques should be introduced to ensure long-term financial sustainability and meet accountability requirements. And the university system itself must be governed by bodies that reflect a much wider range of stakeholder interests than the academic community. The world is indifferent to tradition and past reputations, unforgiving of frailty and ignorant of custom or practice. Education reform is far more than just about funding or turning educational institutions into businesses. It is about promoting a new social contract involving all stakeholders, beyond governments, teachers and students. The terms of the social contract which has underpinned these institutions until now–mainly public finance based mainly on taxation–are changing. Also, governments have to make sure the challenges are met quickly, since the knowledge economy relies heavily on higher education for its raw material of human capital.

It is important to consider higher education in a regional as well as a global context. The higher education and research institutes made their entry into regional policy in the 1980s, when entrepreneurship became central to local development. There were new incentives to create closer ties between knowledge institutions and trade and industry, led by the likes of Silicon Valley in California, Route 128 in Boston and other high technology centres. The idea of growth centres, including a university or a university-affiliated research institute, has conquered the world from Tokyo to Paris and Helsinki to Munich.

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mostly with countries that offered low-skilled work at low wages is long gone. Today, countries like China and India are starting to deliver high skills at low costs–and at an ever increasing pace. This is profoundly changing the rules of the game. There is no way for Europe to stop these rapidly developing countries from producing wave after wave of highly skilled graduates. What economists call «barriers to entry» are falling. Individuals and companies based anywhere in the world can now easily collaborate and compete globally. And we cannot switch off these forces except at great cost to our own economic well-being.

The challenge for Europe is clear. But so is the solution: evidence shows–consistently, and over time–that countries and continents that invest heavily in education and skills benefit economically and socially from that choice. For every euro invested in attaining high-skilled qualifications, tax payers get even more money back through economic growth. Moreover, this investment provides tangible benefits to all of society–and not just to the individuals who benefit from the greater educational opportunities.

In short, if Europe wants to retain its competitive edge at the top of the global value-added chain, the education system must be made more flexible, more effective and more easily accessible to a wider range of people. Success will go to those individuals and countries which are swift to adapt, slow to complain and open to change.

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