MEETING OF THE
OECD EDUCATION COMMITTEE AT MINISTERIAL LEVEL

Paris, April 2001

BIAC Discussion Paper
“NEW COMPETENCIES FOR INNOVATION AND GROWTH”

The quality of human capital is a key contributor to innovation and economic development and is becoming all the more important in the context of the knowledge society. Therefore, the scope, effectiveness and adaptability of the education system are important in increasing competitiveness and ensuring that private enterprise is able to perform efficiently. BIAC is pleased to submit this paper, which addresses business’ views on the main issues to be discussed at the 2001 Meeting of the OECD Education Committee at Ministerial level.

The Growing Importance of Skills and Competencies in the Learning Process

The emergence of the knowledge economy means there is greater focus upon and recognition of the notion that people and their skills are the key to international competitiveness. At the same time, it implies an increasing pace of change, for which new competencies must be acquired. Job profiles are changing in many different ways. On the one hand, there is a need for increased specialisation, while on the other, higher-level generic competencies are required. At the same time, employees mastering multiple skills are in increased demand, both in smaller and larger companies. To better adapt school programmes to the needs of the employment market, a careful analysis of the skills required for specific sectors/jobs and their broad commonalities is an essential step, which can be facilitated by close co-operation with the business community. A useful initiative in this regard is the “Career Space” project within which 11 companies in the ICT sector and twenty European universities are cooperating to define job profiles, needed skills and curricula guidelines for ICT professions (see annex).

The impact of the present development of the New Economy goes beyond the IT-sector and its directly-related services. In their application, new economy technologies reach everywhere in the “Old Economy”, e.g., electronic banking, e-commerce in the retail-sector, digital printing etc. The ability to use Information and Communication Technologies (ICT) is therefore an indispensable prerequisite for work across the wider spectrum of business. ICT skills should be a standard set of tools accessible to pupils from primary school on. Renewal of these skills and competencies should be among the main pillars of lifelong learning (LLL), starting from early childhood education and continuing throughout training in the framework of an adult’s career.

Although OECD countries have succeeded in raising educational achievement levels, there are serious skill shortages due to the new demands of the current innovation-based business transformation. The ICT industry per se has created many jobs and has long-term potential to
continue as well as to spread job creation to other sectors. However, the gap between demand for employees skilled in the application of ICT to business processes and the supply of those skills is expected to rise. The skills gap imposes costs on business in the form of lost productivity, hiring and recruiting costs and limits on growth. Educational institutions should therefore introduce new ICT curricula targeting the common needs of industry. Close co-operation with business to tackle the skill crisis and to help define precise skill requirements, as well as partnership between industries and universities/technical institutions, are essential to deliver positive results.

While ICT skills need to be given increasing weight in today's curricula, other basic skills, such as literacy and numeracy, must remain within the foundation of the education system. In addition to the acquisition of knowledge and the skill to handle, analyse and exploit information as well as to create new knowledge, companies need employees with good generic skills, including the ability to organise, to work in teams and to communicate effectively. Project work, self-activating learning and effective use of information resources are important elements to be added to the toolbox of learning. Personal skills derived significantly from pedagogical methods, such as a sense of responsibility, an entrepreneurial attitude and the ability to take advantage of change are the bridges to adaptation to a fast-moving work environment.

In addition to developing skills and competencies in initial education, the current and future labour force will have to acquire new skills from other sources. An economy with heavy emphasis on innovation and services requires that adults continually update their skills and competencies. Education and training systems will therefore have to offer learning opportunities targeted to groups at different stages of their lives, including young people, the unemployed and employees who are at risk of seeing their skills become obsolete due to the fast pace of change. Adaptability to technological developments will become increasingly important in work and in life in general.

The knowledge society requires continuous attention to employability, which should be considered as a primary career goal. Indeed, the required skill level in most jobs is rising, a set of core transferable generic skills and the use of ICT are essential, and self-reliance, flexibility and LLL are becoming ongoing requirements for all. It is imperative that change be seen as a challenge and an opportunity making way for further improvement in one’s standard of living.

**Securing the Benefits from Lifelong Learning for All**

Professions, old and new, are being reinvented and created rapidly, and job profiles are less stable than some decades ago. LLL is becoming more and more important as the need for re-skilling will be increasingly distributed throughout life. In this context, rather than asking the question whether we can afford to further encourage LLL, we should ask the question if we can afford not to work towards this goal. LLL is a responsibility of 3 actors: government, employers and employees/individuals, with differing responsibilities in the various stages.

Public authorities have the main responsibility for initial education. There is a broad realisation that a high-quality initial education prepares individuals for LLL throughout their career. For this reason, it is very important to offer a publicly-financed and high-quality initial education system as a basis for future progress. The initial education system should enable each individual to obtain the highest possible qualification according to his or her ability. Motivating students to accept change and continue learning throughout their lives should be expressed as a basic curriculum principle.
Effective transition policies are essential to facilitate smooth entry into the labour market. A flexible approach to designing pathways based on the needs of the individual, the requirements of particular industries/job markets, as well as country and regional differences are important elements to be considered. Short-term placements of students in industry as part of their university or technical institute studies should be encouraged. Although it is worth keeping a framework of well defined vocational and academic qualifications in order to have maximum transparency, those qualifications must be responsive to the velocity of developments in many sectors, which cause changing job profiles. The basic element of curricula should be complemented by a more flexible part to allow schools to adjust to the needs of their changing local environment.

In a knowledge society, retraining and re-skilling will be as important as a high quality initial education. Both employers and employees have a major responsibility with regard to further training. Employees need to take initiative to develop transferable skills and to be receptive to learning that is not exclusively job- or firm-specific. Employers can provide development opportunities at the workplace as well as firm- and job-specific training. Indeed, large corporations spend massively on internal training and education. In addition to initial education, Government can encourage further training by offering incentives for personal and company investment. At the same time, government has a special responsibility for those, unemployed as well as employed, who were poor performers or never reached the first level of vocational qualification in the initial education system.

Public strategies and resources for adult training should be targeted at those at risk. Offering access to technology will be particularly important to transforming the so-called digital divide into digital opportunity. The application of ICT is an effective way of improving cost-effectiveness of the education system while at the same time increasing participation in LLL. Digital technologies can transform how, where and when learning takes place. These programmes are often more attractive as they do not involve travel and accommodation costs and are flexible with regard to timing. ICT brings to education the capacity to reach a large audience with consistent quality of content and to target groups with specific needs. The provision of education can also be made more flexible by opening up school facilities for adult training and further education and by using the potential that private providers offer. The major challenge of the 20th century was to offer good initial education to all; in the new century, our ambition should be to achieve LLL for all.

An important question is: What are the drivers for LLL? Both for companies and for employees, LLL should be based on self-motivation and initiative. Beyond initial education, approaches involving compulsory training, whether regulations for firms or employees, may be counterproductive. The return from LLL may be an economic return: higher profits for firms and more productive and better-paid employees. But even more important are longer-term returns, such as: for firms, capacity for growth, remaining competitive, succeeding in innovation and exploring new markets; and for employees, personal development, increasing employability, better position in the labour market, new career options. Other than economic motivation, there is a challenge in finding methods that make the learning process more challenging and attractive. This can be a stimulus for society, innovation and renewal.

Particular attention should be paid to the concept of “life-wide” learning, which means that schools or formal training are no longer, if ever, the only places or ways to learn. There is a variety of places and methods, not the least the workplace itself and at home. We see emerging new methods, such as web-based learning, pre-school education or initial education delivered at home by cable-TV, specialised company-courses, distance learning with support of multimedia. Opening the trading system to delivery of these services will be key to the efficient diffusion of these skills globally. Personal coaching and informal learning take place in particular in smaller firms. Much of the investment in LLL has an informal character, especially in SME’s, and does not manifest itself in surveys and statistics. Better
measuring and monitoring systems are required to unveil this hidden part of personal investment. **Informal learning may be difficult to define, but it promises to return considerable value in the quest to develop productive citizens.**

A number of interesting initiatives have been taken based on the notion that LLL is a concept requiring partnership, motivation and individual initiative: the Investor in People project in UK; different forms of Individual Learning Accounts (e.g., UK, Sweden); the Norwegian Competence Network; the UK University for Industry; schemes in the Netherlands and Spain through which employees can be provided with a PC by the employer at low cost, encouraged by tax-incentives; projects initiated by individual companies in several countries to support ICT-implementation in schools. LLL is a challenge for all. The concept of shared responsibility for LLL raises the question of whether it is possible to develop more mixed-funding patterns, with fair contributions from all stakeholders and with flexibility to invest throughout the career.

**Developing Innovative Teaching and Learning**

High-quality education systems are crucial to ensure social cohesion and sustainable economic growth. The emergence of the knowledge economy poses new challenges for our education systems, which must respond to the needs of individuals, business and society. The gap between the skills that employers require and those with which schools currently equip their students needs to be bridged. Schools must be responsive to rapid developments in the labour market and should therefore reflect the need for new methods and tools at work and in daily life.

Developing new skills is not simply a matter of transferring knowledge from teacher to student. It also means developing personal competencies that require new curricula and teaching methods. **Schools must therefore use innovative methods and help students develop skills in an integrated way.** Traditional top-down classroom teaching has to be mixed with more self-activating learning methods that appeal to personal initiative and responsibility of the student. Today, one of the biggest challenges for the education system is to transform school from being a teaching factory to becoming a learning centre.

In this respect, new technologies can make an important contribution. **ICT has the potential to transform teaching methods by giving students more control and by offering access to an unprecedented wealth of information.** Through the application of ICT, teachers can improve their students' attention, interest and ability to retain, using activating methods. Well used, ICT enables learners to engage more directly with the subject, through interactive systems, virtual experiments and networking with other learners and teachers. To make full use of these opportunities, investment must not just be in software and hardware, but in training teachers how to use ICT in the teaching/learning process. New investments in ICT will only produce significant change if they are understood and applied by the teachers. If knowledge is wealth, its management should be as extensive as any other form of investment, efficient and effective.

**Teachers are central to the reform process,** which implies that their own LLL must be assured. They must keep in touch with developments in firms and society in general, for which they are preparing their students. An efficient system of training and re-training is needed to equip them for these new challenges. In order to ensure that teachers are up to date with professional developments, training must be available on an ongoing basis, including training in non-educational environments. In addition, Public Employment Services have the responsibility to provide feedback to those planning and delivering initial as well as re-skilling education.
Government policy offering new pathways to the teaching profession should be encouraged. For example, it should be possible for experienced staff to accept a teaching job in vocational education (full or part-time), thereby sharing their practical experience with students. Although this would require additional pedagogical training, experience and high motivation should be recognised as important factors for successful teaching. In this context, schools and employers can co-operate by encouraging increased mobility between enterprises and the education system, as they are both interested in preparing students adequately for working life.

**Reliable systems of accountability are needed** to ensure that schools provide adequate value for money and monitor closely the various cost elements. In addition, clearly defined standards of knowledge and competencies are needed to measure achievements. The system must also provide incentives for better performance to create a rewarding system for individual schools, teachers and students. Teachers should be given the opportunity for a career which rewards good performance and offers incentives.

High quality education systems are essential to equip students with the skills necessary to keep up with the pace of change of the knowledge society. An efficient education system, adapted to the needs of the labour market, and the improvement of skills and employability are crucial to continued economic growth and increased employment. The OECD can make a valuable contribution in this area. BIAC would be pleased to co-operate with governments to identify new innovative solutions to respond to this challenge.
Annex

Proposals from the Career Space consortium of companies to increase long-term availability of Skilled workers*

- Universities and other technical institutions should collaborate with the ICT industry in adapting their courses to reflect the needs of the industry.
- The ICT industry should provide higher education curriculum course designers with clear up-to-date and easily accessible information on the skills needed by industry.
- The ICT industry should participate in the delivery of ICT curricula, by for instance providing guest lecturers and advice to education institutions, and also provide industry placements to students taking ICT courses.
- Governments should actively support all education institutions wishing to introduce the new ICT curricula.
- All stakeholders should monitor the take-up of ICT courses and monitor and anticipate the supply and demand.
- Encouraging Electrical Engineering and Computer Science University departments to combine in order to recognise communications convergence and remove both duplication and historic differences in approach and culture.
- IT literacy should be treated as a core part of school curricula in the same way as reading and writing and be taught not as an option, but as a set of key skills and the key to ongoing learning.
- Educators at all levels, but especially those with career guidance responsibilities must actively work to attract students, especially girls into science, engineering and ICT relevant courses and positively present the opportunities available within the ICT sector.
- All teachers, lecturers and education officials should be IT literate and actively encourage the use of ICT across curricula and non-curricula activities.
- All investment, individual or business, in ICT learning and education should be tax-exempt. This should include the provision of free services and of ICT kit to staff.
- Professional institutions responsible for curricula development and accreditation should be much more flexible on course and entry criteria to meet the needs of the rapidly changing ICT industry. ICT professionals and companies are less concerned with professional membership than abilities, approach and motivation.
- Access and format of ICT tertiary education should be much more open and flexible to encourage the entry of people who did not follow traditional routes.
- Governments and the private sector should work together to provide ICT training through public/private partnership programmes. A number of programmes of this kind have been undertaken with impressive results and these should be carefully evaluated as possible models for more general application.
- Consideration should be given to opening-up higher level engineering education in Europe to the private sector.
• Increased capital investment in learning centers and networks as well as investment in materials is needed.

• Just-in-time cross training is needed to give new skills to already experienced professionals.

• Promoting ICT/technical studies by reducing the tuition fees or providing other financial incentives for these studies.

• Promoting maths and science and the use of ICT across all subjects and especially with girls.

• Exploiting the inclusivity of ICT technology to enhance education and learning access and ICT awareness amongst minority and disabled people.

Proposals to increase the current resource availability/mobility

• Work permit and Visa restrictions should be made easier for qualified foreign nationals with key ICT skills.

• Pensions / National Insurance / Personal tax arrangements for cross border working within the EU and other regional groupings should be radically simplified to promote the mobility of skilled people.

We are in the midst of a revolution that requires much more than incremental change. We have the challenge of high unemployment levels coupled with the opportunity of unfilled ICT job vacancies.

Urgent action across all sectors must be taken in order to harness the potential of the information and communication technologies.

*The companies members of Career Space are: BT, CISCO SYSTEMS, IBM EUROPE, INTEL, MICROSOFT EUROPE, NOKIA, NORTEL NETWORKS, PHILIPS SEMICONDUCTORS, SIEMENS AG, TELEFONICA and THALES, as well as the EUROPEAN INFORMATION AND COMMUNICATIONS TECHNOLOGIES ASSOCIATION (EICTA)*