

**DIRECTORATE FOR EDUCATION
EDUCATION POLICY COMMITTEE**

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**MEETING OF THE EDUCATION POLICY COMMITTEE AT MINISTERIAL LEVEL
INVESTING IN HUMAN AND SOCIAL CAPITAL: NEW CHALLENGES**

Issues Paper 2: Matching skills to emerging needs

Thursday 4 November – Friday 5 November 2010

This document is one in a series of four Issues Papers prepared as background to the discussions at the Meeting of the Education Policy Committee at Ministerial Level to be held at the OECD in Paris from 4 -5 November, 2010.

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ISSUES PAPER 2. MATCHING SKILLS TO EMERGING NEEDS

The issue

1. Among the OECD countries with the largest expansion of academic and vocational education over the last decade, most have still seen rising earnings differentials for graduates, suggesting that an increase in knowledge workers has not led to a decrease in their pay, as has been the case for low-skilled workers. But it is not just more of the same education that is needed, the *nature* of the skills in demand is changing too. A generation ago, initial education was expected to last students for a lifetime. Today, education and training need to prepare learners at all levels for more rapid change than ever before, for jobs that have not yet been created, using technologies that have not yet been invented, to solve problems that cannot be foreseen. In fact, at the current rate of growth of knowledge, students can expect significant advances in knowledge during their education.

2. Skills and technology have flattened the world so that all work that can be digitized, automated and outsourced and now be done by the most effective and competitive individuals, enterprises or countries, wherever they are. These changes have been mirrored in the demand for skills in labour-forces. Following a decline in the demand for manual work in earlier decades, the steepest decline in the demand for skills has recently occurred in routine cognitive task input, involving mental tasks that are well described by deductive or inductive rules. Such tasks are prime candidates for computerisation. Rules-based tasks are also easier to offshore to foreign producers than other kinds of work. The dilemma these trends pose from early childhood to higher education is that the kinds of skills that are easiest to teach and easiest to certify are the ones that are most rapidly disappearing from the labour markets of advanced economies. Conversely, recent trends show sharp increases in the demand for task input requiring complex communication, which involves interacting with people to acquire information, explain it or persuade others of its implications for action. Similar increases have occurred in the demand for non-routine analytical skills, involving solving problems for which there are no rule-based solutions (see Figure), and requiring individuals to develop skills of problem-solving and inquiry-based learning throughout their education.

3. While the demand for skills is changing rapidly, known skill shortages often do not translate efficiently into curricula and learning provision, either because education and training systems often lack effective means to identify, articulate, recognise and communicate required skills from those who use them to the institutions who develop them, or because they do not have the staff and instructional methods to develop them.

The challenges

4. It is hard to predict the future from past trends. However, in an increasingly globalised and interconnected economy, value will be less and less likely to be created vertically within sectors and fields of knowledge and increasingly horizontally, through new forms of global collaboration and distributed tools for innovation. Expressed differently, we are seeing a shift from a world of stocks – with knowledge that is stacked up somewhere depreciating rapidly in value – to a world in which the enriching power of communication and collaborative flows is increasing. As proprietary knowledge today will be a commodity accessible to anyone else tomorrow, individuals and enterprises will need to move beyond their

traditional silos of knowledge towards connecting the dots between different fields of knowledge where the next invention will emerge.

5. To meet the challenges, countries will need to develop flexible educational pathways through initial education; promote skill acquisition and equity of access to learning; anticipate key sectoral trends and the associated evolution of labour demand; identify essential skills for strong, sustainable and balanced growth; deploy their skill base effectively by improving the match between skill supply and demand; and develop more efficient and sustainable approaches to the financing of lifelong learning that establish who should pay for what, when, where and how much.

6. How can governments improve the knowledge base about skill development and support systems of continuous innovation and feedback to develop knowledge of what works in which circumstances? How can they shift the focus from “life-long employment” to “life-long employability” by fostering the culture of lifelong as well as life-wide learning needed to prepare motivated, engaged learners who can conquer the unforeseen challenges of tomorrow, not to speak of those of today? How can learning to learn itself be better embedded in the curriculum to foster continuous and self-regulated learning?

7. Drop-out and non-participation remains a major issue in many OECD countries. How can education and training systems address this with curricula and instructional methods that recognise that individuals learn differently, and differently at different stages of their lives? How can they strive to meet those individual needs of individuals, wherever they are, even if they chose not to enrol in formal education or training? How can they take learning to the learner in ways that allow individuals to learn when they want and how they want?

8. How can education and training establish a strong coalition of governments, businesses, and social investors who bring together the legitimacy, innovation and resources to make lifelong learning a reality? How can they actively encourage new entrants and not allow monopolies to persist?

Policy responses

9. Educational reform will need two inter-related prongs, one that focuses on what needs to be learned and the second on making such learning available to learners in a high quality, customised way. Good intelligence will be central for all actors in the system – individuals (students, parents and workers), employers, education providers and government agencies. Could the OECD help through the development of a skills framework that assists countries to *i)* mobilise and develop intelligence about national supply chains from the acquisition and development of skills in schools, through their utilisation in labour-markets and societies more broadly, up to how they feed into better jobs, higher productivity, and ultimately better economic and social outcomes; *ii)* customise the policy insights from comparative work and peer learning so that they can have a real (and real-time) impact in national policy contexts, and *iii)* contribute to building the required strategic partnerships?

10. Early childhood education and schooling are critical foundations for future acquisition of knowledge and skills. Too often, the key role that these components of the educational sector play are segregated from the later specialization and skill development roles of tertiary. How can policy responses become more strategic by shifting to trajectory based investments when experience has highlighted the limitations of relying on transitions between the systems?

11. With a rapidly rising demand for skills, countries can no longer simply rely on education systems that efficiently sort individuals, but need to improve learning outcomes throughout the population and to capitalise on the full potential of all individuals. This requires governments to ensure that skills are developed in effective, efficient and fair ways across the lifecycle, and to ensure responsiveness, quality and flexibility in provision. Could the OECD play a pathfinder role for countries to *i)* identify effective

strategies for new ways of learning and skill provision, *ii*) improve the knowledge base about learning science and skill development, and *iii*) support systems of continuous innovation and feedback to develop knowledge of what policies work in which circumstances? A better understanding of the drivers of change in skill demand within firms, classes of occupations and countries could also help countries shift the focus of learning provision from supplying skills for today's labour-market to shaping future jobs. Inevitably, this will be an area of growing importance. Labour markets are becoming increasingly complex and dynamic. We are seeing growing convergence of occupational sectors and rising job and occupational mobility, and rapid decreases in the lifetime of domain-specific knowledge. All this requires individuals to upgrade their skills more regularly and leads to new patterns of work and learning, for which schools need to lay the foundation. Furthermore, those that are displaced through restructuring of the economy should have the means by which they can be re-trained and re-skilled based on building on their amassed human capital to be re-integrated into the labour market.

12. There is also significant potential for peer-learning among countries for establishing the appropriate mix of academic and vocational programmes in ways that reflect student preferences and employers' needs, with vocational training providing immediate employability, but also basic transferable skills to support occupational mobility. In particular, technical and semi-professional learning pathways can integrate both classroom and hands-on learning in addition to work placements from secondary school onwards. Countries could learn from each other about how to promote partnerships between vocational institutions and industry, to promote flexible pathways of recruitment, and to provide appropriate pedagogical preparation to those responsible for trainees and apprentices. Countries have also different approaches to ensure that teachers in school-based training have the actual work experience, and teachers in work-based components have the required pedagogical experience.

13. Credentials and assessment drives learning by articulating what society values. Schools need to get their learning goals and standards right and to transform their assessment systems to reflect what is important, rather than what can be easily measured. Building on the OECD's experience with PISA, the recognition of qualifications and vocational education, would countries gain by collaborating in the OECD framework to identify, define and assess new essential skills and embed them in curricula, with dimensions ranging from ways of thinking (e.g. creativity, critical thinking, problem-solving and decision-making), through ways of working, to tools for working (e.g. the capacity to recognise and exploit the potential of new technologies) up to what it takes to live in a multi-faceted world as active and responsible citizens, giving adequate recognition to generic skills as well as domain specific and firm-specific skills? Similarly, could countries gain by collaborating within the OECD framework to stay ahead in the fast-changing field of assessment policies and practices towards multi-layered assessment systems that extend from classrooms to educational institutions, to regions, to countries and to the international levels? This could include collaboration to develop new assessment policies and practices to support improvement of learning at all levels of the education system; that become increasingly performance-based in terms of activating learners as owners of their own learning and as learning resources for one another; and that add value for teaching and learning by providing information which can be acted on by students, teachers, and administrators. It could also involve improving the understanding of what assessments reveal about students' thinking to shape better opportunities for student learning, ensuring that assessments enhance student learning with tasks that are well crafted to incorporate principles of learning and that capitalise on new data handling tools and technology connectivity to combine formative and summative assessment interpretations for a more complete picture of student learning; and establishing a comprehensive and well-aligned continuum of information that can be used to communicate what is expected and to hold relevant stakeholders accountable.

14. Last but not least, as the boundaries between where individuals learn and use their skills are becoming blurred, governments will need to build new relationships, networks and coalitions between learners, providers, governments, businesses, social investors and innovators. Such coalitions can mobilise

the legitimacy, innovation, and resources that are needed to make lifelong learning a reality for all. Governments will also need to evaluate the mixture of learning providers (public, private, and third sector organisations) and individuals who provide content, learning opportunities, and instruction to learners of all ages. This includes finding ways to encourage both employers and students to participate in workplace training, to ensure that such training is of good quality, with effective quality assurance and contractual frameworks for apprentices. It also includes engaging employers and unions in vocational policy and provision and providing career guidance accessible to all, informed by knowledge of labour market outcomes. Because of the changing nature of the job market, career guidance can no longer be associated only with schools and tertiary education.

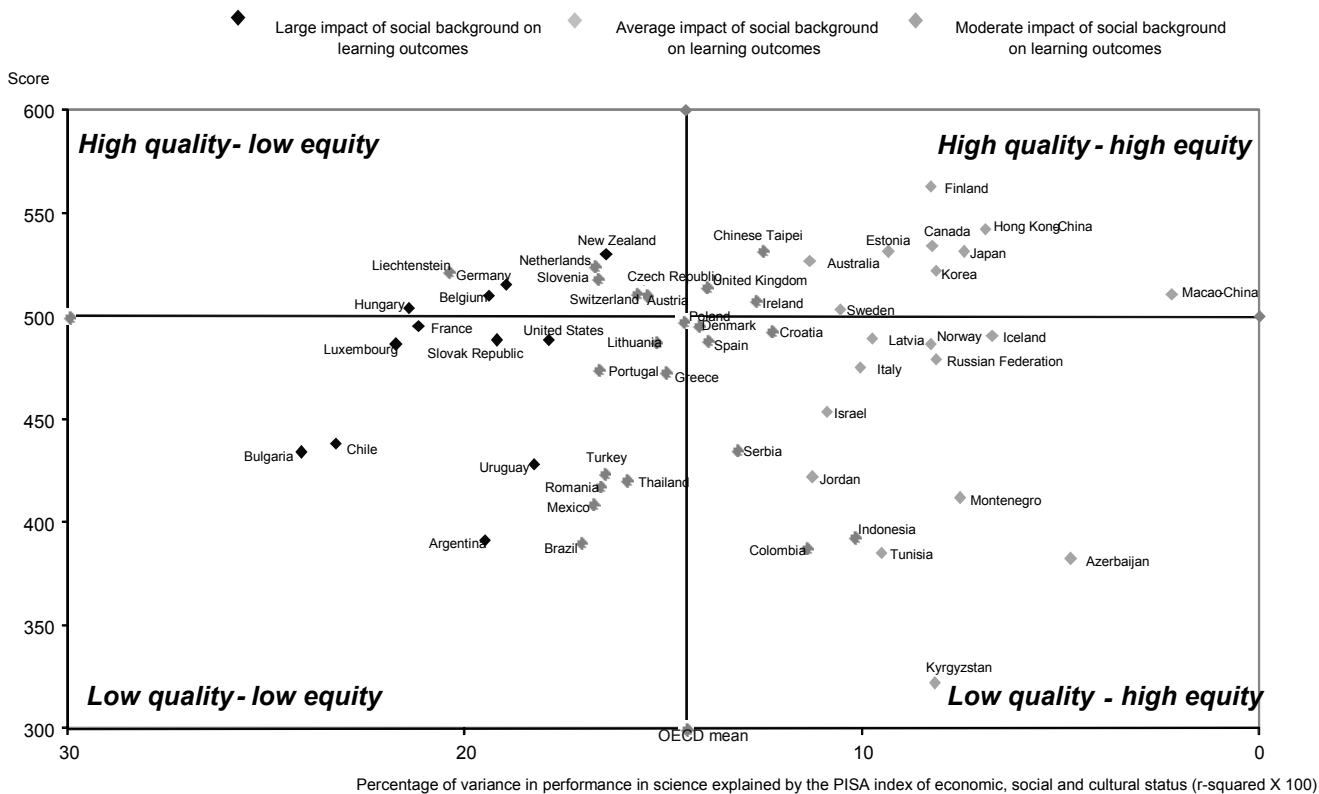
15. Finally, the rising demand for skills also implies that all stakeholders must be prepared to mobilise more time and money for learning. The mixed provision of lifelong learning may demand new funding models to make it easier to invest in learning. Investing in learning must be cost and tax-efficient for individuals and their employers. For those out of work, funding needs to be accessible to support and incentivise learning. Governments need to use regulation and taxation to encourage financial institutions to develop new financial instruments that allow learners to access opportunities when they need them most, including through lowering cost, reducing risk and smoothing and even delaying repayments. For learning beyond universal education, education and training systems need to find ways to share the costs among government, employers and students based on the respective benefits obtained.

Questions for discussion

1. How are governments anticipating the demand for skills, how do they establish effective ways to communicate the demand for new skills from those who use them to those who produce them, and how do they translate this into the design of effective learning organisations and instructional methods?
2. What education and training policies have been introduced or are being considered to ensure quality and efficiency in learning provision and equity in access to learning opportunities, how are governments building coalitions with the business sector and social investors to resource the rising demand for better skills and how are they establishing sustainable approaches to who should pay for what, when, where and how much?
3. How could an international skills strategy contribute most effectively to national policy development? How can the OECD provide support to national skill strategies?

Figure 1. Quality in learning outcomes and equity in the distribution of learning opportunities

Average performance of countries on the PISA science scale and the relationship between performance and the index of economic, social and cultural status



Source: OECD PISA 2006 database, Table 4.4a