

## INNOVATION STRATEGY FOR EDUCATION AND TRAINING

*A project led by the*

*OECD Centre for Educational Research and Innovation (CERI)*

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### **Background**

1. [The OECD Innovation Strategy](#) was launched by Ministers at their [May 2007 Ministerial Council Meeting](#). There a mandate was given to address countries' needs for a more comprehensive, coherent, and timely understanding of how to promote, measure and assess innovation and its underlying dynamics of change. In response, the OECD has started to develop an effective horizontal and multidisciplinary strategy for addressing the needs of countries for advice on harnessing the potential of innovation as a driver of growth and productivity, equity and development.
2. The Innovation Strategy is being developed through a comprehensive process of internal OECD consultation as well as consultation with governments, the private sector, academia, labour, international organisations and civil society.
3. The horizontal work of the Innovation Strategy involves four working groups, each focusing on one of the following areas:
  1. *Global Dimensions*, which includes global challenges in health, energy, climate change, and water;
  2. *Markets and Governance*, which examines the impact of incentive structures provided by framework conditions and policies at the global, national and local levels;
  3. *Human and Social Capital*, understood as the role of people, human capital and workplace factors in the innovation process;
  4. *Measurement*, which aims to identify what is *not* measured that is fundamental to understanding, promoting and assessing innovation.
4. [The Centre for Educational Research and Innovation \(CERI\)](#) will co-lead the contribution on human capital and make a contribution on innovation in education. It launched a new project in April 2008, called "Innovation Strategy for Education and Training". It focuses on: 1) *human capital for innovation*, and 2) *innovation in education and training*. A strong foundation for both these areas already exists in previous and on-going work in the OECD Directorate for Education, notably:
  - [PISA](#) together with other surveys and statistical data (in particular, forthcoming: [PIAAC](#)) provide baseline information on student skills, including those that are particularly relevant to innovation, as well as some information on school characteristics.
  - Two complementary and wide-ranging reviews have analysed the link between tertiary education and innovation, research and development:
    - the [thematic review of tertiary education](#), focusing on national policy, and

- [a review of the contribution of higher education institutions to regional development](#), led by the programme on Institutional Management in Higher Education (IMHE) in co-operation with the service on Public Governance and Territorial Development (GOV).
- Previous CERI work embraces the study of specific [innovations in education](#), with extensive work on the use and impact of technology on education (schools and universities), on open and social innovation (Open Educational Resources), on educational R&D and its use in the policy and classroom arenas, and on knowledge management.
- Current CERI work provides an analysis of “[systemic innovation](#)” in vocational education and training and digital learning resources.

5. The newly launched project will provide a good foundation for setting a forward-looking agenda on innovation and education in OECD member countries and provide decision and policy makers with guidelines and principles that help them foster, mainstream and sustain innovation. The work will take stock of what we know and do not know regarding the links between education and innovation, with a view towards advising on potentially useful directions for policy research in coming years on both “education for innovation” and “innovation in education”.

### **CERI led project: An innovation strategy for education and training**

6. CERI’s project proposes focusing on two main areas: (1) human capital for innovation, and (2) innovation in education and training systems.

7. The two proposed areas of work are strongly related since the production of relevant human capital for innovation will require effective innovation in education and training systems, and since education is a major sector of developed economies where innovation is as needed as in all other ones.

8. Box 1 presents the harmonised [OECD definition of innovation](#).

#### **Box 1. Innovation: the OECD definition**

There are essentially four types of innovation identified in the Oslo Manual for measuring innovation: product innovation; process innovation; marketing innovation and organisational innovation.

**Product innovation** involves a good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. In the education sector, a product innovation can be a new or significantly improved curriculum, a new educational software, etc.

**Process innovation** involves a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. In education, this can for example be a new or significantly improved pedagogy.

**Marketing innovation** involves a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. In education, this can for example be a new way of pricing the education service or a new admission strategy.

**Organisational innovation** involves introducing a new organisational method in the firm’s business practices, workplace organisation or external relations. In education, this can for example be a new way organization of work between teachers, or organizational changes in the administrative area.

These innovations can be new to the educational institution, new to the market/sector or new to the world.

***First strand: education and human capital for innovation***

9. What kinds of skills, education and training systems are needed to maximise innovation in the economy? How do individual levels of human capital aggregate into real innovative capacity? How does a better-educated society foster social innovation, and an innovative society put new pressures on education?

10. This strand of the proposed work will contribute directly to the human capital component of the strategy and will be carried out in collaboration with OECD Directorates specialised in a variety of fields. CERI's contribution would focus on issues such as *i*) the identification of the appropriate stocks of human capital for innovation, *ii*) the necessary skills to be fostered in education and training, and *iii*) the education and training policies that best develop countries' innovative capacity.

11. This will cover advanced skills that are necessary for radical or technological innovations and those skills which contribute to organisational and non-technological innovations, the capacity to absorb new innovations or to retrain following innovation-related job destructions and structural changes of society at large.

12. In this strand of the work, the main objectives will be to ensure that the Innovation Strategy:

- Goes beyond formal education and training measures and analyses learning within organisations and networks of organisations, addressing the interactions between the education and training system and the economic system.
- Reviews and elaborates on our understanding of relevant skill types and forms of human capital, including non-technical skills such as creativity and entrepreneurial skills.
- Enhances understanding of the *processes* through which human capital is effectively formed, given that some learning processes may be more conducive to innovation than others. Much skill development takes place through processes such as mentoring, coaching and good management practice, which are not captured in standard measures of training.
- Enhances our understanding of the *interactions between human and social capital*, *i.e.*, the role of individual and organisational networks in building human capital and promoting innovation. For example, social networks are vital for building trust and promoting knowledge diffusion.
- Stresses the need for a *lifelong learning* approach in the Strategy because lifelong learning has the potential to both drive continuous innovation *and* to help the economic system to absorb and adjust to innovations.

13. A *regional dimension* is also important: innovation is often the result of collaboration at the local level between industry and business and higher education through technology transfer, contract research, and education tailored to regional needs. Policies to support such work are often weak, as are funding and the incentive structures for higher education institutions and staff to engage in innovation.

14. These are broad goals. The precise ways in which the project will engage in them depends on the development of the OECD-wide Innovation Strategy and on the complementary inputs of a variety of stakeholders and OECD Directorates.

## ***Second strand: innovation in education and training***

15. The second area of the CERI contribution to the OECD-wide Innovation Strategy will focus on innovation in education and training. If individuals are to be equipped with the capacity both to innovate and to adapt to innovation, it is important to better understand how education systems can become more innovative themselves in order to quickly and better respond to new knowledge and social demands. What kinds of skills, education and training systems are needed to maximise innovation in the education sector itself?

16. This second strand will greatly benefit from the work and findings of the first strand, but it will also contribute to advancing the understanding of innovation in contexts where radical or technological innovation is not the main form of innovation. Indeed, innovation in education and training is a prime example of innovation in services (and public services), which is an important focus of the OECD innovations strategy. What can countries do to foster innovation in their education and training systems, a primarily public sector representing about 6% of their GDP where innovation is mainly non-technological? This is certainly an important question that innovation strategies of the 21st century will have to address.

17. This part of the work will contribute to the OECD Innovation Strategy and give more political awareness of the importance of innovation in education. It will aim to provide policy makers with guidelines on how to make their innovation systems work in education.

### **Box 2. Recent CERI work in relation with innovation**

Technological innovation in education: [Giving knowledge for free. The emergence of open educational resources \(2007\)](#) deals with open and social innovation; [E-learning in tertiary education: where do we stand? \(2005\)](#) addresses the challenges of the development and adoption of online learning; [E-learning. The partnership challenge \(2001\)](#) looks at new business models for the development of e-learning.

Pedagogical innovation: [Formative assessment. Improving learning in secondary classrooms \(2005\)](#) shows how this innovative assessment method was piloted in different countries and what the benefits and barriers to its adoption are; [Teaching, Learning and Assessment for adults. Improving foundation skills \(2008\)](#) extends the study to innovative pedagogical practices for adults learners.

Educational research: [New challenges for educational research \(2003\)](#) reviews educational research in a few OECD countries and points to some ways to enhance its impact; [Evidence in Education: Linking Research and Policy \(2007\)](#) argues for the use of randomised control trials in educational research, especially when it comes to policy use, and stresses the importance of brokerage agencies for disseminating educational findings. [Understanding the brain. The birth of a learning science \(2007\)](#) shows how neuroscience is starting to cast light on cognitive processes in a way that can guide education policies.

Innovation and knowledge management in education: [Knowledge management in the learning society \(2000\)](#) claims that strengthening knowledge management at every level of the education system would make it more innovative and compares the processes of knowledge production, dissemination and use in the engineering, ICT, health and education sectors; [Innovation in the knowledge economy. Implications for education and learning \(2004\)](#) looks at the sources of innovation (scientific knowledge, users and doers, modular structures, ICT) and assesses the extent to which they are active in the education sector.

Innovation networks: [Networks of innovation. Towards new models for managing schools and systems \(2003\)](#) shows how regional, national and international school networks have led and can lead to innovation and points to the challenges of having innovation becoming a real cultural transformation; [Cities and regions in the new learning economy \(2001\)](#) shows how education is an important component of regional innovation systems.

Internationalisation and innovation: [Internationalisation and trade in tertiary education: opportunities and challenges \(2004\)](#) and [Cross-border tertiary education: a way towards capacity development \(2007\)](#) show how innovation and quality enhancement can be driven by internationalisation and the cross-border mobility of people, educational programmes and institutions.

18. A first objective will be to *identify the barriers that hinder innovation* in education and to propose several ways to overcome these barriers and stimulate product and process innovations. One aspect of this discussion will likely relate to the markets and governance theme of the horizontal strategy. Some countries do actually view some deregulation of the education sector as an engine for innovation. Another aspect will lie in the political management of risk, as innovation involves failure that is less easily handled in education than in some other sectors. The governance mechanisms are also very different in the private than in the public sector. Other aspects will relate to the investment in educational R&D, to the quality of this R&D and its evidence-based character, to knowledge management, to the incentives or motivation of teachers to adopt innovative practices in certain institutional settings, to teacher training, to the school climate, organisation, and management, to the existence of a demand for innovative private developers of educational innovations, etc.

19. One well-known difficulty of innovation in education lies in mainstreaming and sustaining successful innovations. Another difficulty sometimes lies in the lack of incentives for public and private innovators. Finally, the implications of innovation in terms of equity and social cohesion will also be addressed, as innovations do not always reach the less advantage groups or nations as easily and can help widen the inequity gap.

20. A second objective will be to propose ways to progress on measuring the amount and nature of innovation that takes place in education systems, acknowledging that the common indicators (R&D expenditures, number of researchers, patents, number of innovative firms) are not necessarily appropriate. The results of the horizontal work on measurement within the Innovation Strategy will inform this area.

21. This strand of the work builds directly on recent CERI work dealing with innovation, generally from different specific angles rather than in a systematic way (see Box 2). It will also extend current work within CERI on [systemic innovation in Vocational Education and Training \(VET\)](#) and in [the use of digital learning resources](#), that will be completed early 2009, and which scrutinises *i*) the knowledge base for innovation, *ii*) the processes of monitoring and *iii*) the criteria for evaluating systemic innovation. It will put a stronger emphasis than previous work on how innovation relates to the governance of education systems, including teacher training, funding and risk management.

22. The work will cover all educational sectors, from early childhood to tertiary and adult education, and encompass both the public and private sectors.

23. A comparison between the education and health sectors might be very helpful. Both are important public services, the latter being arguably more visibly innovative, and both carry the same problems of risk management giving the lasting effect of the services for their recipients. Extensive work has been done on each sector within the OECD. The Innovation Strategy is an ideal opportunity to bring the work on innovation done in these two areas together.

### **Expected outcomes and timing**

24. The timing will be adjusted to the OECD-wide timetable, but the following outputs are currently envisaged.

- A contribution to the final OECD horizontal report with its set of general, whole-of-government principles for promoting innovation, especially in its human capital dimension.

25. The anticipated deadline for the final output of the horizontal product is mid-2010: the outcomes of the OECD Innovation Strategy will be presented to Ministers at the 2010 Ministerial Council Meeting (MCM).

26. The envisaged outputs of the second strand of the project would be as follows:

- a brief thematic report on innovation in education with a set of general principles to foster, mainstream and sustain innovation in education and training systems, including some coverage of what we know and what we do not know;
- a series of conferences and fora to start an international discussion on the best ways to create an innovation-friendly environment in and through education;
- country analyses and new evidence on the extent of innovation in education, and on the potential for innovation, possibly with new indicators to measure it.

27. A strong emphasis will be put on engaging stakeholders in a discussion of these issues and in awareness-raising activities.

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