



How innovative is the education sector?

- Education has one of the highest shares of innovative jobs for tertiary graduates of all sectors of the economy in Europe, and a higher proportion than in other public sector areas such as health and public administration.
- Innovation in knowledge or methods is the most common form of innovation, with education outperforming all sectors of the economy on this measure.
- Within education, higher education is much more innovative than the primary and secondary levels – and is one of the most innovative sectors of the economy in terms of innovation in knowledge or methods.



The public sector, including education, is often perceived as reluctant to change and disinclined to innovate. We define innovation as the introduction of “new or significantly improved products, processes, organisation or marketing methods” (OECD/Eurostat, 2005). As they are in “non-competitive” markets, public sector organisations do not face the same pressure as the private sector to innovate and improve efficiency. But what does the evidence say? The REFLEX (Research into Employment and professional Flexibility) and HEGESCO (Higher Education as a Generator of Strategic Competences) surveys asked higher education graduates five years after graduation to report on their job characteristics, as well as their own and their organisation’s levels of innovation. They allow one to answer questions such as: how does education compare to industries more commonly associated with innovation such as manufacturing? How does the level of innovation in education compare to that of other public sector domains? What kind of innovation does the education sector mainly generate?

Education is among the most innovative sectors ...

Jobs are referred to as highly innovative when tertiary graduate employees say that they work in an organisation at the forefront of absorbing innovation and that they themselves contribute to innovation. According to this definition, the education sector has a greater proportion of highly innovative jobs (59%) than average (55%), but less than the manufacturing sector (64%). In the 19 European countries covered by our analysis, the education sector has roughly the same proportion of highly innovative jobs as business services (61%) and agriculture (59%), and more than most other sectors (Figure 1).

When the education sector is broken down by level, higher education appears to be the most innovative of all sectors (69%), slightly higher even than manufacturing, while primary and secondary education are around the average.

... especially in innovation in knowledge or methods.

Education has the largest proportion (48%) of jobs involving innovation in knowledge or methods – the most common type of innovation in most sectors (Figure 2). This is far more than the average for all sectors (37%), including the sector with the next-highest proportion, business services (44%). Innovation in knowledge or methods could include innovations in curriculum or assessment practices as well as, for example, changes in research methods in higher education.

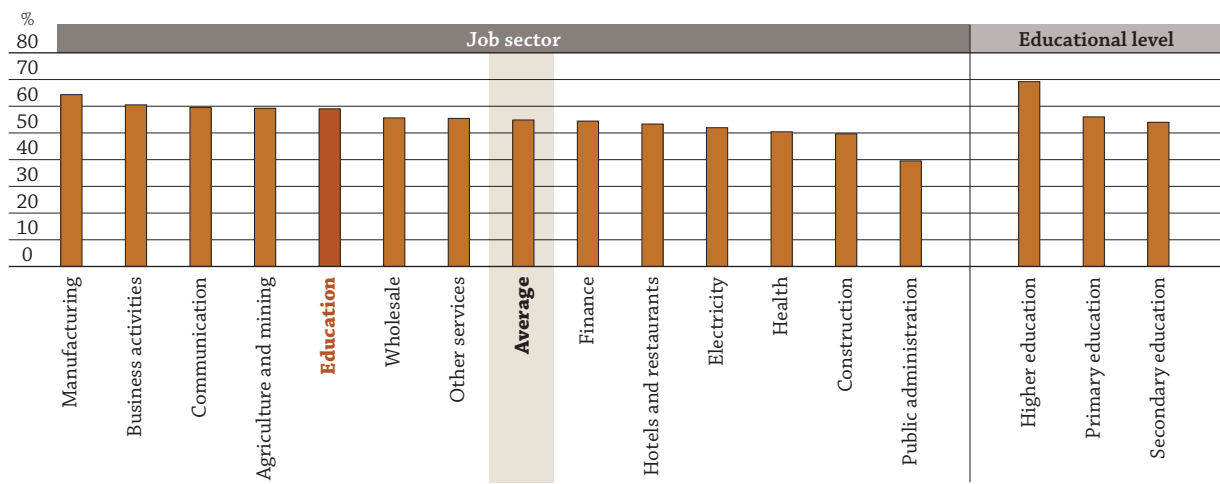
Education is slightly below average in terms of product or service innovation. Twenty-five percent of tertiary graduates in the education sector report that they hold a highly innovative job related to product or service innovation, compared to 29% on average for all sectors. The education sector is at the average (21%)



300%
36.2014
33.7
28.32

for innovation in technology, tools or instruments, the least common type of innovation in most sectors. For these last two types of innovation, manufacturing has the highest estimated share of innovative jobs, with 37% of jobs reported as innovative in products or services, and 29% in technology, tools and instruments.

Figure 1. **Percentage of highly innovative jobs by sector, all countries combined, and breakdown by level for the education sector (2005-08)**



28.32
33.7
36.5
60.0
46.0
43.0
2014
2010
2008
2013

Note: "Average" presents the average across all sectors in the 19 countries covered. Sectors are ranked in descending order of their percentage of highly innovative jobs. **Source:** OECD (2014), *Measuring Innovation in Education: A New Perspective*, Chapter 4; REFLEX (2005); HEGESCO (2008).

Education appears more innovative than other public sectors.

The education sector appears to be more innovative than other public sector domains, including health and public administration. The most notable difference between them lies in the proportion of innovative jobs in terms of knowledge or methods. Forty-eight percent of jobs in education involve innovation in knowledge or methods, compared with 38% in health and 26% in public administration. Innovation levels in technology, tools or instruments are also higher in education (21% of jobs) than in health (16%) and public administration (13%). One quarter of jobs in education and health involve product or service innovation, compared with 18% in public administration.

The difference between the levels of innovation in education and in health is particularly noteworthy given the higher level of research and development in health-related fields. This might be the result of a different division of labour and perhaps a more specialised innovation model in the case of health.

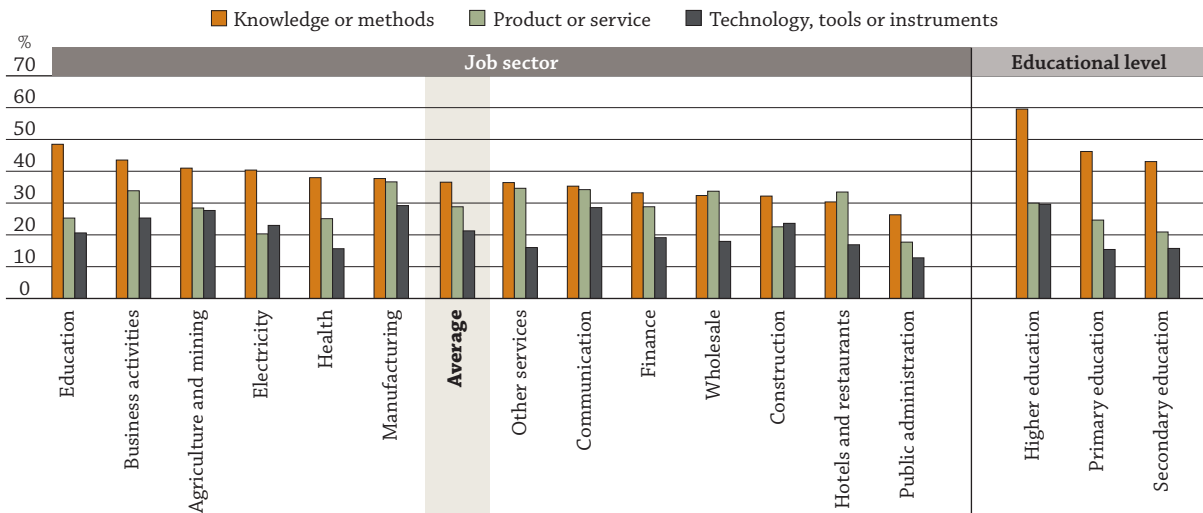
There are marked differences according to the level of education.

While, on average, education has a higher proportion of jobs involving innovation than most other sectors, there are significant differences across education levels. Primary and secondary education offer similar levels of innovative jobs, but innovation is much more intense in higher education. This is particularly the case for innovation in knowledge or methods, with 60% of highly innovative jobs of that type in higher education, against 46% in primary and 43% in secondary education (Figure 2). This finding also extends to innovation in technology, tools or instruments, with 30% of highly innovative jobs of that type in higher education compared with 15% in primary and 16% in secondary education.

Furthermore, higher education is estimated to have a similar proportion of jobs involving innovation of knowledge or methods and of technology, tools or instruments as the manufacturing, communication and agriculture sectors. This makes higher education one of the most innovative sectors according to our metrics.



Figure 2. **Percentage of highly innovative jobs by sector and type of innovation, all countries combined, and breakdown by level for the education sector (2005-08)**



Note: "Average" presents the average across all sectors in the 19 countries covered.

Sectors are ranked in descending order of the percentage of highly innovative jobs in knowledge or methods.

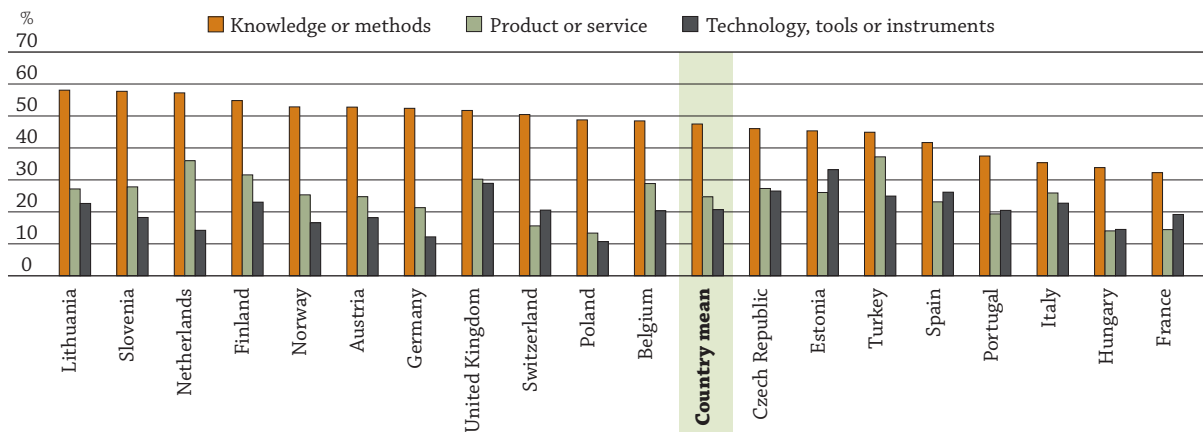
Source: OECD (2014), *Measuring Innovation in Education: A New Perspective*, Chapter 4; REFLEX (2005); HEGESCO (2008).

The share of innovative jobs in education varies greatly among countries...

Innovation levels and patterns also appear to vary significantly across countries (Figure 3). Given that our indicators are based on self-reporting, however, we should be cautious when comparing countries.

According to our measure, there is nearly twice as much innovation in knowledge or methods in education in Lithuania as in France (58% and 32%, respectively). The Netherlands, Lithuania, Slovenia and Finland have the most innovation in education of any type. The United Kingdom ranks first for educational jobs involving the three types of innovation (17%).

Figure 3. **Percentage of highly innovative jobs in education, by country and type of innovation (2005-08)**



Note: "Country mean" presents the average of the 19 countries covered.

Countries are ranked in descending order of the percentage of highly innovative jobs in knowledge or methods.

Source: OECD (2014), *Measuring Innovation in Education: A New Perspective*, Chapter 4; REFLEX (2005); HEGESCO (2008).



9.8% 2014
50% 2014
28.32% 2014
625 2014
6% 2014

Finland and the United Kingdom are the only two countries where the estimated share of innovative jobs in education is (statistically significantly) above the European average in two out of the three types of innovations covered by our datasets. Conversely, Hungary has a lower level of innovation for all types, whereas France and Poland have a lower than average proportion of innovation for two out of three types.

... depending on the type of innovation.

While they are not far from the average level in most our innovation metrics, Turkey and Estonia respectively have the highest estimated proportion of education jobs involving innovation in product or service (37%) and technology, tools or instruments (32%).

The Netherlands and Spain have an unusual innovation profile, with a higher or lower proportion of innovative jobs than the European average depending on the type of innovation. In the Netherlands, the proportion of innovative jobs in knowledge or methods (57%) is higher than average but the proportion innovating in technology, tools or instruments is lower (only 14%). The reverse is true in Spain (respectively 42% and 26%).

While these initial country measures give us interesting information about their comparative innovation intensity, one should keep in mind that innovation is not a goal in itself. It relates in complex ways to education performance and perhaps to the development level of countries' education systems.

2013 6% 26

The bottom line: The idea that public sector organisations are less innovative than business sector organisations does not hold for the education sector. According to the innovation profiles of tertiary graduate jobs, education is one of the most innovative sectors of society, especially for innovation in knowledge or methods. Among the sectors covered, higher education has the largest share of jobs involving innovation of all types, outperforming manufacturing and business activities, while primary and secondary education are close to the average. Although there are large variations across countries, innovation in knowledge or methods is the most prevalent type of educational innovation in all European countries covered by our analysis.

For more information

- Higher Education as a Generator of Strategic Competences (HEGESCO) (database), <http://www.hegesco.org>.
- OECD (2014), *Measuring Innovation in Education: A New Perspective*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264215696-en>.
- OECD/Eurostat (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, The Measurement of Scientific and Technological Activities, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264013100-en>.
- Research into Employment and professional Flexibility (REFLEX) (database).

Contact

Stéphan Vincent-Lancrin (Stephan.Vincent-Lancrin@oecd.org) / Gwénaél Jacotin (Gwenael.Jacotin@oecd.org)

<p>Visit www.oecd.org/edu/eag.htm Education Indicators in Focus (previous issues) PISA in Focus Teaching in Focus</p>	<p>Coming next month <i>Who are PhD Students?</i> Due to the release of <i>Education at a Glance 2014: OECD Indicators</i> on September 9, the next issue will be published in October.</p>
--	--

Photo credit: © Ghislain & Marie David de Lossy/Cultura/Getty Images
 This paper is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.
 This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.