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Adult Learning, Adult Skills and Innovation

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A broader link between adult education and innovation has been highlighted by a number of scholars and analysts in recent years. Overall, a strong correlation can be observed at the country level between adult education activity as measured in the EU Adult Education Survey and innovation performance (CEDEFOP, 2012). Tellingly, this correlation is found to be stronger than that between the proportion of higher education graduates and innovation performance. One interpretation of these data is that tertiary education itself is not sufficient for innovation. That is, higher learning may need to be complemented with adult education, including training and workplace learning, in order for it to make a significant contribution to innovation. Moreover, innovation is not just something that highly-educated people do or something that happens only as consequence of specialised researchers working in R&D departments. It involves workers across the skill spectrum.

The idea that continuous learning is part and parcel of innovation processes is intuitive. Yet, many policy makers, scholars, and practitioners, such as human resource managers fail to grasp the need to develop and nurture broad-based adult learning systems at the country, regional or organisational level. Is adult learning in all its forms strategically fostered to enable innovation? Can it be or should it be? It is easy to see that these questions have important implications for the EU agenda on innovation. Not least, innovation and entrepreneurship are considered to be key for the creation, development, growth and long-term survival of firms. European statistics are indicative here, as they show that 72% of the European companies have introduced at least one innovation in their company over the period 2012-2015. These innovations consist in a wide range of domains, new or significantly improved services (45%), goods (42%), organisational methods (38%), processes (32%) or marketing strategies (32%) (Innobarometer, 2015).

The topic of innovation and entrepreneurship is important because it is directly relevant for outcomes, such as a start-up or the introduction of a new product, process, practice or service. But scholars increasingly acknowledge that innovation is not just about outcomes, it involves processes of learning and communication. Yet, in practice, it continues to often be approached from a narrow perspective. Take, for instance, well-documented proxies for innovation, such as R&D investment and patent data. The notion behind these proxies is that innovation is a result of a linear process in which universities, research institutes and R&D departments are the core players. Knowledge is created by the research institutes and subsequently finds its way into new products and processes – the so-called Science, Technology and Innovation (STI) mode of innovation (Jensen *et al.*, 2007). Based on this view of innovation, one might conclude that the European food industry is not very innovative compared to other European manufacturing industries. However, this perspective neglects the fact that many innovative firms do not perform R&D and that a large proportion of innovations are not patented. The practice of patenting varies widely according to sector, but this does not mean that innovation does not occur in sectors with fewer patents.

To illustrate the dynamics involved, recent research highlights the importance of interactions with suppliers, customers, stakeholders and other forms of multi-stakeholder processes and feedback from the market as key modes of innovation (Arundel *et al.*, 2007).

This mode of innovation - the Doing, Using and Interacting (DUI) mode - is of particular importance in low and medium technology sectors (Arundel *et al.*, 2007) and in particular for Small and Medium-sized Enterprises (SMEs) (92% of all European enterprises have less than 10 employees). DUI emphasises the importance of learning and innovation for the whole workforce. It is not something that is exclusive for those active in R&D departments (Toner, 2011). Therefore, firms are increasingly looking for ways to encourage and foster innovative and entrepreneurial behaviour in their employees.

Several aspects related to innovation processes are thought to lead to success, including successful start-ups or the launch of new products (Reid & De Brentani, 2004). Some of these activities include problem finding, idea generation, information collection, joint problem-solving, idea screening and exploration (Ardichvili, Cardozo, & Ray, 2003). From a skill oriented perspective, these activities are closely connected to what is referred to as 21st century skills. It is not a coincidence that key competencies as identified in the European Reference Framework on Lifelong Learning include *sense of initiative and entrepreneurship* (EC, 2006).

As evidence mounts that such skills are subject to learning and development, it is easy to see that the level of commitment to learning that is espoused by organisations is likely to have consequences. Several researchers seem to agree that innovation and human capital are interdependent and reinforce each other (CEDEFOP, 2012; Lundvall & Lorentz, 2012). However, more in-depth interdisciplinary research is necessary, as this relationship seems to be more subtle than often claimed in research and policy reports (CEDEFOP, 2012; Toner, 2011). As Jones and Grimshaw (2012) stated, the conceptual interest in human capital in the innovation literature stays at a rather implicit, superficial level. To be sure, knowledge on learning for innovation and entrepreneurship remains highly fragmented. One reason for this is that it has been studied through different disciplinary and conceptual lenses (e.g. economics, management or psychology), as well as at different levels – individual, group, organisational, and even inter-organisational.

Disentangling the relationships between learning and innovation at different levels is not only relevant for those interested in adult learning, organisational learning, and human resource development, but also for those interested in formal education. For example, highly innovative companies indicate that the organised training of staff in innovation-related aspects such as sales and marketing would be the most important type of public support they could obtain (Innobarometer, 2015). Moreover, initial levels of formal education are increasingly expected to prepare students to self-direct their learning beyond formal education, including on their job. In all sorts of new configurations such as ‘living labs’, ‘innovation labs’ or ‘hybrid learning configurations’, new partnerships are emerging to address today’s innovation challenges. These partnerships typically consist of knowledge producing centres, including (vocational) education institutions, businesses and other organisations that aim to develop innovative solutions. Thus, rather than being consumers of innovative knowledge at the end of the innovation cycle, students and teachers become active participants in the innovation process (Wals, Lans & Kupper, 2011).

This special issue has sought to broadly address the theme of adult learning, adult skills and innovation by collecting contributions which draw on analytical insights from a number of recent and ongoing cross-national research projects in Europe that revolve around this theme. These projects include the recent survey conducted under the auspices of the OECD, namely the Survey of Adult Skills (alternatively known as the Programme for the International Assessment of Adult Competencies – PIAAC), the EU-sponsored LLLightinEurope project, and the BRAIN (Barriers and drivers regarding adult education, skills acquisition and innovative activity) project sponsored by the Research Council of Norway.

In this issue

Following the success of the Journal's inclusion of more personal reflection pieces (*thought pieces*) in Volume 50, which are written in a freer style and take whatever angle the author chooses in addressing an important but simple question, we have invited one short thought piece addressing the following question: '*what role, if any, does adult learning play in innovation?*' **Stephan Vincent-Lancrin** reflects on this question in a way that adds substantially to the issue by offering a broad overview of the relationship between adult learning and innovation. Importantly, he points out the 'reverse causality', namely that innovation itself necessitates adult learning in order to adjust to new ways of doing things or using new technologies.

The first article is by **Edward Lorenz, Bengt-Aake Lundvall, Erika Kraemer-Mbula, and Palle Rasmussen** who base their analysis on PIAAC data to address the relationship between forms of employee learning and work organisation, as well as the role of national systems of education and training. They emphasise the short-comings of a 'skill-deficit' type of thinking, which is still prominent in the policy debate. In highlighting the workplace as an important site for learning and developing expertise, their analysis points to some of the conditions under which national education and training systems can relate to a favourable environment for continuous learning and adaptation.

Moving towards the individual level, the article by **Liv Anne Storen** attempts to capture what it means to be innovative. Based on a selection of countries from the PIAAC database, she concludes that the likelihood of 'being an innovative strategic learner' at work is not just a matter of human capital in itself (e.g. education), but is also very much dependent on how work is organised, particularly in terms of flexibility and autonomy. Although from a different angle, namely that of entrepreneurial behaviour of employees, **Yvette Baggen, Thomas Lans, Harm J. A. Biemans, Jarl Kampen, and Martin Mulder** confirm the importance of innovative work behaviour at the individual level in their study of SMEs. In their analysis, they go one step further and illustrate that innovative work behaviour is in fact the most important predictor for translating ideas into new projects within companies.

Two other articles focus more on the question of how firms (can) actually foster learning that is connected to innovation. This brings the role of Human Resource Management (HRM) to the forefront. **Dorothy Sutherland Olsen's** study of large Norwegian firms illustrates the informal and unplanned nature of learning that is connected to innovation, but also the importance of learning from others within and outside the firm. **Brandi and Iannone** further structure the role of HRM by providing an overview of the literature and introducing a model in which they emphasise three aspects of learning strategies in high-performing enterprises. These include skills development, learning systems and incentives, as well as work design and the organisation of work. They stress the importance of the latter in their analysis of the data they collected from a group of companies.

Finally, an important recurrent topic across all the articles which link learning, work (organisation) and innovation is complex problem-solving. The article by **Peer Ederer, Alexander Patt, and Samuel Greiff** delves deeper into the relevance of problem-solving for innovation and taps into a fundamental question: can complex problem-solving skills be developed?

Part II of this issue begins with an article by Jon Olaskoaga-Larrauri, Miren Barrenetxea-Ayesta, Antonio Cardona-Rodríguez, Juan José Mijangos-Del Campo and Marta Barandiaran-Galdós, *Between Efficiency And Transformation: The Opinion Of Deans On The Meaning Of Quality In Higher Education*. The literature on quality management at higher education institutions has for some time been working on the basis of two issues: a) the

diversity of ideas as to what 'quality' means and b) the idea that this diversity is in some way a response to the different positions occupied by stakeholders in regard to the processes and institutions of the sector. It has been suggested that students, employers, administrations in charge of funding and academics may hold different positions concerning the purposes of universities and, therefore, concerning the criteria on which their quality should be assessed. However, those stakeholders have rarely been asked directly what concept of quality they defend. This article presents the results of a survey of deans of Spanish university faculties and schools in which this question was put to them. Their answers contrast with some of the commonplaces of current literature.

The second article, *The road travelled in Europe towards the 2020 European objectives in Education. A Spanish perspective*, by María Luz Martínez Seijo and Juan Carlos Torrego Seijo, analyses the facts and difficulties that influence the educational policy of the EU to reach agreements and the facts that define common work until the year 2020, mainly under the principle of subsidiarity or complementarity. It also discusses the way to work in the different administrative political systems of the EU countries. Another objective is to discuss the role that National Agencies have in the development of European programmes in the different administrative political systems.

The third article, *International Influences on Post-Soviet Armenian Education* by Shelley Terzian, constructs an analysis of the most recent international influences on Armenian education, illustrating how international standards are driving post-Soviet reform in the Armenian Secondary Schools.

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