

Learning organisations for VET

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3.1 Introduction

THIS CHAPTER DISCUSSES THE POSITION OF VOCATIONAL AND TECHNICAL COLLEGES within regional economies. An analysis of developments in the knowledge-based economy leads to the conclusion that VET colleges should develop into recognised players in regional innovative networks of companies. Based on case studies from a regional and intraorganisational perspective, the conclusion is drawn that VET colleges in Europe have not yet attained such a position.

The case studies were taken from studies of the Dutch context in metal engineering and agriculture. The results of these studies were the impetus for a European project on comparable issues; the results of this project are presented too.

The colleges in these projects were aware of the urgency of developing new tasks in the regional economy, but have not as yet developed operational strategies, although some good practices are found as benchmarks. Learning cultures inside companies, on the one hand, and inside colleges, on the other, are growing apart: educational learning processes are characterised by certainty and codification, whereas innovative learning processes within companies are typified by uncertainty and participation. College managements should reorganise learning and working inside colleges in interaction with working and learning in society and the regional economy.

Section 3.2 of this chapter discusses the new challenges for VET as a consequence of the emerging knowledge based economy. Learning and innovation are seen as two sides of the same coin, taking place in networked companies. VET colleges have to join these networks to be able to respond to social and economic skill demands. Section 3.3 presents two case studies from the Dutch VET context analysing the strategic behaviour of VET colleges and section 3.4 presents the results of a European survey amongst VET colleges in six European countries. Section 3.5 concludes that VET colleges are locked up in an industrial learning paradigm, which is no longer compatible with the knowledge based economy. To prepare VET for the challenges of the new economy, VET management has to reorganise the colleges into 'learning organisations', closely connected to regional innovation networks.

3.2 Education and training in the new economy

The western economy is developing rapidly towards becoming a dynamic knowledge-based economy. Work processes will become increasingly knowledge-intensive, and the dynamics of knowledge development will increase too. Innovation and technological development will have a major impact on work at all levels of the

economy. Economic activity in Western society is only sustainable if economic policy is based on dynamics and knowledge development. Innovation is vital for the competitive strength of western companies. Mayer describes this development more extensively in Chapter 2.

Dynamics in knowledge development will lead to rapid changes in production processes and connected tasks and functions. The rate of change in functions and occupations will increase, as will qualifications and competence requirements. The qualitative demand for the labour force will show an analogous shift on the labour market, and in the process, vocational and technical education will be confronted with large shifts in the demand for new graduates and for maintaining the competencies of the workforce. The product definitions for VET, as specified in qualification structures and in requirements for company training, will show great dynamics and changes. VET colleges will be forced into enormous flexibility and external orientation, in order to be able to adapt their services to changing external demands.

Flexibility in VET may take different shapes and forms: at the level of course supply (e.g. modularisation of courses, different market strategies), as well at the level of services (other supporting services besides course supply), and at the level of 'deliveries' (distinct levels of knowledge and skills, e.g. connecting tacit and codified knowledge). Legislation at the level of educational systems should support the development of such flexibility.

The emergence of a knowledge-based economy presents VET with a great challenge. The OECD (2001) states that individual learning, supported by colleges, must be combined with organisational learning inside firms, to enhance regional development towards the 'new learning economy'. The OECD is strongly in favour of new forms of production and a regional organisation of the economy, with major consequences for learning and education. Keep and Brown (2000), on the other hand, are more sceptical about the emergence of the new economy; they argue that traditional 'tayloristic' production models are still operational in the majority of UK firms. With this sceptical warning in mind, we elaborate in the next sections on innovation as the driving force behind the emergence of the new economy. In the knowledge-based economy, producers can no longer rely on established routines. As a result of global information flows and an emerging global market - meaning worldwide competition, cycles of product innovation shorten. Production then becomes synonymous with innovation. During the 1990s, there was growing attention to the concept of the learning organisation: learning was no longer perceived as an individual activity isolated from daily work tasks, but an activity that needed to be embedded in the organisation to ensure the effective, efficient, and innovative performance of that organisation. The organisation, in turn, is embedded in an economic context, so a network approach is needed to understand learning and innovation processes at the organisational level.

3.2.1 Understanding innovation

Innovation is essential for the competitiveness of companies and industrial sectors, regions, and local communities. Innovation and technological development is the main tool to survive the economic process of creative destruction (cf. Schumpeter in Kleinknecht, 1994). Protection of 'old' companies hinders the process of creative destruction, which will lead to underinvestment in innovation. Innovative companies

are more resistant to economic crises. Dosi (1988) describes the microeconomic processes of innovation. Innovation is, according to Dosi, problem-solving: ill-defined technical problems have to be solved through creative 'learning', based on formal and tacit knowledge. Tacit knowledge is important in relation to the appropriateness of innovations: the comparative advantage depends on it. Innovations are cumulative; they are built on former activities and in-company knowledge, which hinders the imitation of innovation by competitors. Company-internal knowledge and routines lead to a preference for the company's internal innovation. Even in the case of purchasing new tools, internal capacity is needed to implement the new knowledge. Innovative companies are built on their own core competence (Hamel & Prahalad, 1992). The embeddedness of innovations within this core competence and internal learning processes is the best protection against imitation. Innovation leads to company-specific knowledge (tacit knowledge; see Dosi, 1988; Nonaka & Takeuchi, 1995), which strengthens the 'forward' position of innovative companies. Tacit knowledge depends on people: it is important to have long-running contracts with the core of the employees. Hartog (1996) states that the new economic order demands increased flexibility of the workers on the one hand (higher skills, life long learning), and job security on the other. Flexibility should be translated into trainability and learning skills, and not into labour market mobility.

Problem-solving and innovation by trial-and-error processes are part of informal learning processes, in which social networks play an important role. Workers learn by sharing knowledge in the working team, and employers learn by creating networks of colleagues and advisers. Research studies of innovation (see Coehoorn, 1995; Engel, 1995; Rölling, 1992) show that linear models for knowledge transfer should be replaced by or combined with interactive models, in which trial-and-error processes on the shop floor are interrelated with the existing knowledge base and research infrastructures. Detecting and using external knowledge sources, combined with the organisation of internal learning processes, is a central aspect of modern management. Oerlemans (1997) regards innovation as an embedded process within a broader knowledge context, in which the exchange of learning and technical sources is elemental, especially for SMEs. Economic networks are crucial to transform heterogeneous knowledge sources into useful "*neue Kombinationen*". According to Oerlemans, companies are embedded in a heterogeneous knowledge context. Innovation is an embedded process; knowledge and technology are exchanged within networks of collaborative companies and institutions. The innovative process can be characterised as rearranging existing knowledge into new combinatory knowledge. To organise this combinatory process, companies need to collaborate with other companies and knowledge institutes. This is especially the case for small and medium-sized companies, because they do not possess large internal knowledge sources or research potential. For effective innovation, small and medium-sized companies have thus to use external knowledge sources. Public agencies and innovation centres at the sectoral and regional level, technical colleges and universities may play this important role of back-up service for SMEs. In addition, industrial, local, and regional networks are necessary for the transformation of knowledge into new innovative combinations and products.

The external knowledge context is complex for SMEs. The entrepreneur or the employer, with his skilled employees, is continuously involved in problem-solving and innovative processes (Nieuwenhuis, 2001). In the first instance, he looks for internal solutions, but soon the use of external sources will become a necessity.