Chapter 1.20

Contributions of E–Collaborative Knowledge Construction to Professional Learning and Expertise

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ABSTRACT

Modern employment and work life demands employees who continuously develop and actualize their competencies. Information and computer technology (ICT) provides rich opportunities to support individuals in their professional learning. This contribution describes professional learning from the perspective of research on expertise, which analyses the development of knowledge structures on the way from novice to high performing expert. First, a general concept of competence and knowledge development is to be discussed and different types of knowledge are to be distinguished. Then this contribution discusses opportunities to support this development with e-learning scenarios on the various levels of knowledge construction. The main argument is that e-learning opportunities are an option to overcome the traditional distinction between formal and informal learning. However, crucial challenges for implementing e-collaborative knowledge construction remain – as the contribution finally will conclude.

INTRODUCTION

In order to enhance people's employability and enterprises' competitiveness, educational policy in Europe focuses heavily on lifelong learning (Grek et al., 2009; Rauner, 2008). This is a reaction to the circumstances of modern worklife in Western industries, which is often characterized as knowledge-based or knowledge-intensive work (Cort, 2009). A crucial component for occupational success on an individual level and economic success on an organizational level is the capability

to react to changes in the competition, which can be the result of technological development or customers' demands. As a consequence of market diversification, it is not possible to predict developments precisely. Moreover, it is plausible that future developments and demands cannot be foreseen. Hence, it is rational to rely on employees' capabilities and competences, which are the best and most flexible resources available for the enterprises. Employees are expected to develop expertise in their professional domain, in order to be capable of steadily performing on a high level (Gruber, Harteis, & Rehrl, 2008). However, it cannot be sufficient just to focus competence development on top-down strategies of human resource development programs. Sending employees to trainings and seminars are only one component of individual learning opportunities. It is the workplace environment itself which is a rich source for learning experiences (Billett, 2001, 2006a). Employees are expected to develop their competencies in a self-directed fashion.

Without a doubt, information and communication technology (ICT) is an important resource for all kinds of work-related and professional learning. Computer networks can support professional learning activities in manifold ways: they provide access to information, and they allow the distribution of knowledge and bring together individuals who are spatially distributed. In the area of educational sciences, research on professional learning investigates preconditions for the development of professional competencies. This article describes the recent understanding of professional expertise and discusses chances and challenges for e-collaborative knowledge construction as a support for professional learning as the development and the maintenance of individual professional competence and expertise.

DEVELOPING PROFESSIONAL COMPETENCE AND EXPERTISE: STATE OF RESEARCH

When discussing issues of professional learning, the core reference is professional competence. In the following sections a theoretical concept of professional competence and its development is discussed, in order to develop a precise understanding of the purposes that are followed by work-related e-collaborative knowledge construction. This section presents a typology of professional competence as well as a consideration of the acquisition of competence from the perspective of knowledge construction. Several types of knowledge (e.g., declarative, conceptual, procedural, and negative knowledge) are distinguished in order to explain the capability to perform on a high level. Case examples of computer-mediated learning processes, which illustrate this general theory of professional competence in the area of e-collaborative knowledge construction, will be addressed in the third section.

Typology of Professional Competence

Educational research in the area of professional learning focuses on conditions, characteristics, and effects of the development of professional competence. Large parts of that body of research focus on the teaching and learning of teachers, so that teaching certainly is among the best investigated of professional domains. Ample findings exist regarding how teachers acquire knowledge, from being a teaching novice to becoming a teaching expert (Berliner, 2001). Meanwhile, professional learning research covers almost the full range of occupational activities from artists or sportsmen, managers, white collar workers through blue collar workers (e.g., Boshuizen, Bromme, & Gruber, 2004; Ericsson, Charness, Feltovich, & Hoffman, 2006; Billett, Harteis, & Eteläpelto, 2008). The most prominent approach

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