

# Chapter 1.17

## Knowledge Management, Communities of Practice, and the Role of Technology: Lessons Learned from the Past and Implications for the Future

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### ABSTRACT

*This chapter reviews the current work in knowledge management (KM) and attempts to draw lessons from research work in situated cognition about the nature of knowledge which can be useful to the field of KM. The role of technologies and the issues of literacy in technology are discussed in the context of communities of practice (CoPs) and the KM framework with some examples described for K-12 settings. Implications are drawn in terms of how teachers and students can be a community of learners-practitioners through technologies which support their work and learning processes.*

### INTRODUCTION

As countries in the world compete globally in a knowledge and technology-driven environment where national and global business boundaries continue to dissolve at an unprecedented rate, education is seen as one of the key strategies in meeting the challenges ahead. Educating citizens with attributes such as innovation, creativity, and enterprise has become the rallying call of many governments to make their economies competitive. In order for K-12 schools to produce citizens with such attributes to meet the challenges ahead, school leaders and teachers must be able to fully exploit and share critical pedagogical knowledge

with one another. Knowledge management (KM) is a key enabler of a successful school today. In this chapter, KM is discussed in the context of teachers sharing knowledge as a community of practitioners, and when such a community can be facilitated through technologies, the technology literacy levels of teachers are developed in the process. This chapter will begin with a discussion of KM and how lessons from situated cognition can be drawn to inform the field of KM and the issues of CoPs, and technology literacy in K-12 schools are drawn as implications to KM as found in the later parts of this chapter. As the field of KM may be new to many readers of this book, a relatively large section of this chapter will be devoted to the discussion of KM.

In essence, KM is an attempt to understand what works in organizations and institutions such as K-12 schools—their best educational practices, expert practitioners' thinking, and other processes that seem obvious to the experienced school leaders and teachers, but would be alien to beginning teachers. In the past, knowledge management practices focused primarily on the management of data and information. But, more recently, KM practices increasingly revolve around facilitating dialogue and forming collaborative groups within the organization that leverage on innovative information technology (IT) tools to create, capture, and use that information to facilitate communication among individuals to meet organizational goals (Duffy, 2000; Petrides & Guiney, 2002). Thus, the appropriate adoption of technologies in KM in schools should increase the technology literacy levels of teachers. Much of the difficulty in KM for schools lies in the fact that these KM processes may be very much hidden as tacit or implicit knowledge. The difficulty with tacit knowledge is that there is only an extent through which that knowledge can be made explicit. Take for example the case of riding a bicycle. If someone were to ask you to describe the process of riding a bicycle (or how to ride it), you would

probably begin to tell about how to balance, how to position the steering, how to pedal, and so forth. However, this merely describes the how-to procedure of bicycle riding. You would probably agree that there is more to riding than the procedure of how-to. Even if we could articulate all about our experiences of riding a bicycle, it is still not the same as the actual skill of riding one. There is a fundamental difference between descriptions of experiences and the actual experience. In other words, tacit knowledge may not necessarily be fully described in explicit terms. The irony is that even if one can fully describe the tacit knowledge, you would not know if what is articulated is the fullest description ever possible.

Tacit knowledge about teaching and learning processes is thus the knowledge gained through experience of managing K-12 schools and designing appropriate learning opportunities for students. Expert teachers and school leaders gain a whole wealth of tacit knowledge as they encounter numerous cases and problem-solving experiences during the course of their work. In the past decade, artificial intelligence (AI) attempted to create expert systems such as intelligent tutoring systems by trying to make explicit the tacit knowledge of expert teachers through codifying this knowledge in the form of computer programs. Two decades of research yielded the fact that expert systems (containing the rules of expert thinking) are not isomorphic or equivalent to experts. Polyani (1964) stressed that we know much more than we can say. Expert teachers and school leaders, in other words, know much more than they can tell or articulate what they know. For example, reading a book written by a successful school leader in turning around a poorly performing school is still miles apart from what the person actually knows from the wealth of his personal experiences in turning around such a school.

KM is an attempt to make explicit what is implicit. Of course, not all implicit or tacit knowledge is useful to a school. A school's tacit knowledge is

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