Chapter XXI
Information Technologies’ Impact on Individual Learning Process: The Case of a Community of Practice

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ABSTRACT

Information Technologies (IT) seem to be affecting individuals and organizations’ communication and behaviors since many years now. This chapter is about understanding the possible impact of IT on the process of individual learning in a community of practice; in other words the authors wonder if those technologies can possibly help increasing individual competencies in order to improve their learning. They will specifically compare communication in two IT (the email and the web forum) by using agent-based simulation. Results show that each technology has a different impact on individual learning and that communication through emails appear to make individuals learn slower than on a Web forum. Conclusions are widely discussed.

INTRODUCTION

Today, executives have to face a changing and unpredictable environment where the rules of communication are constantly in progress as information technologies (IT) are moving fast. In fact, with IT development, the access and diffusion of information become easier; technologies like the World Wide Web allow ways of communication that couldn’t be imagined some years ago. The profusion of information induced by these technologies makes information abundant and it is no
longer considered as a “rare resource” (Feldman and March, 1991). Gathering information is no longer seen as a major problem, but understanding and giving sense to this information seems to be much more problematic. That’s the reason why importance is given to improve information management and learning processes, so that companies can develop and be able to face the perceived complexity of their environment.

In this unpredictable and changing context, knowledge is a well kept immaterial capital (Foray, 2000); it can be seen as a potentially provider of competitive advantage to organizations. Knowledge is acquired through a complex learning process which allows individuals to gain new competencies and skills. Improving this learning appears significant to executives as they’ll be able to develop their personal abilities, understandings and expertise. Here, information technologies might have a significant impact and support the executive’s learning process.

The aim of this paper is to shed light on the impact that IT may have on the process of learning. In a more specific way, we will use agent-based simulation to compare the effects on individual learning process of two types of web-based technologies (the email and the web forum). The question we ask here is: how can the process of learning be improved according to the technology used? As a context for this comparison, we choose to focus on communities of practice. Indeed, these communities, seen as informal networks composed of individuals working together in the development of a common practice (Lesser and Storck, 2001), are considered as very efficient tools in the sharing of knowledge within social networks (Lave and Wenger, 1991; Brown and Duguid, 2000). Moreover, according to Cohendet et al (2000), an organization can be considered as a set of overlapping communities, which play an important role in the process of organizational learning.

In order to answer the question mentioned above, we will use an agent-based model built upon data collected in an empirical study that we made in a French research centre in June 2005. Our approach of learning here is very simple and specific to the model we build. We won’t be talking about the several types of learning that we often come across in the literature; it’s not the point here. We are only interested in the way that technologies may affect individual learning and we’ll simply consider that an individual “learns” when his competencies rise. Our methodology is based on multi-agent simulation, based on an empirical case study on a specific network (that we’ll call the Cormas network). In that network, agents most often interact to solve problems related to the use of the Cormas software, and therefore our approach of learning consists in addressing the learning of agents through the raise of their competencies in a specific practice.

This paper will be structured in three parts: the first part concerns a background literature on communities of practice and learning. In the second one, we will first present the main issues through the description of a case study, and then follows a description of our models and a presentation of the results. The third and last part will contain a discussion of our concluding remarks and some further developments.

LITERATURE BACKGROUND: COMMUNITIES OF PRACTICE (CoP) AND LEARNING

This notion appeared for the first time in the early 1990’s, in the work of Lave and Wenger (1991). A CoP is seen as one of the most efficient concepts to study the process of knowledge sharing in groups (Lave and Wenger, 1991; Brown and Duguid, 2000; Lesser and Storck, 2001). A community of practice (CoP) is defined as an informal network composed of agents working together in the development of a common practice (Lesser and Storck, 2001). They interact and exchange knowledge and ideas and build a common rep-