Chapter 3.11
Computer Mediated Technology as Tools for Social Interaction and Educational Processes:
The Implications for Developing Virtual Teams

Karen Rohrbauck Stout
Western Washington University, USA

ABSTRACT

Computer mediated technologies (or CMTs) enhance educational processes and are tools that have particular implications for learning and interacting in virtual teams. To better understand how educational tools may be implemented to enhance student learning in virtual teams, the author addresses Wartofsky's (1979) explication of tools as cultural artifacts. Distinctions about primary, secondary, and tertiary tools provide a framework to analyze implementations of educational CMT research. Implications of these tools on virtual team's cognitive skills and collaborative learning are explored. Tertiary tools are explored in particular, as they may provide virtual teams with shared interaction space and alternative representations of the social world. The author provides examples of CMT implementation and suggestions for technological and pedagogical advancements.

INTRODUCTION

Among faculty, students, academic leaders, and the general public, there is a growing recognition of the power of information technology to help improve the quality of teaching and learning, improve the motivation and attention of students, and improve students' career preparation. (Gilbert, 1996, p. 12)

Technology has the potential to transform learning. It has already transformed organizational environments, as computer mediated and satellite technologies make collaboration possible among geographically dispersed individuals

without face-to-face interaction. In organizational environments, virtual team members collaborate via computer mediated technologies (called CMTs) to accomplish goals or outcomes. These computer mediated interactions and relationships hold potential value for organizations, as time (i.e., across time zones) and space (i.e., across geographic distance) hold particular challenges for accomplishing and coordinating goals. Increasingly, educators create virtual teams (i.e., in graduate and undergraduate programs, for business training) to provide geographically dispersed individuals access to educational experiences. Advancements in the development of educational CMTs have led to popular perceptions of technology as capable of widespread, qualitative change. Implementations of educational CMTs have been limited, however, particularly in training students for virtual teamwork.

Educational CMTs are tools to enhance teaching and learning. To demonstrate how these tools may be implemented, the author addresses Wartofsky's (1979) explication of tools as cultural artifacts. Wartofsky's distinctions about primary, secondary, and tertiary tools provide a framework to analyze, design, and implement educational CMTs and hold particular implications for virtual teams. The author reviews current implementations of technology in light of Wartofsky's framework, exploring how technology mediates cognition and interaction. This review highlights tool use with implications for virtual teams' learning and interacting. Virtual teams may think and talk about material in an alternative, motivating learning environment when Wartofsky's framework guides CMT applications. Wartofksy's theory offers direction for technological development, and this study provides examples for higher education in general and organizational communication courses specifically.

CMT AS A CULTURAL TOOL AND ARTIFACT

Tools preserve and transmit skills, which allows the continuation of social and cultural organizations. Our perception of the world occurs through the context of tool creation and use (Wartofsky, 1979). Because tools alter human perception, they constrain the possibilities of action and thought (Resnick, 1991). Our perception is filtered through representations of cultural values:

The human intention is embodied both in the tools used in production, in the skills acquired and adapted to this use, and in the forms of symbolic communication which develop in language, in art, in dance and poetry, in their origins . . . the dominant forms of representation are the filters . . . and more than this, actually transform the function (and speculatively, also the structure) of these mechanisms.(Wartofsky, 1979, p. 205)

Humans cycle tools back into the culture, altering modes of action and perpetuating the cycle. This feedback loop results in human perception and praxis that are mediated by action and tools (Wartofsky, 1979). Like those who create and use them, CMTs are embedded in a larger culture that socializes learners into a particular social and cultural milieu (Lambrecht, 1993). As representations of a culture, CMTs contain the culture's intellectual history and particular theories. This may have significant implications for mental work, as tools assist in cognitive processing needs (Resnick, 1991). Therefore, tools warrant great scrutiny and reflection.

The continued examination of the design and implementation of educational CMTs is an important part of this feedback loop. Educators can play proactive roles by carefully selecting CMTs for students and learning goals. Information derived