Team Learning and Reflexivity in Technology-Mediated Collaboration

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ABSTRACT

This study examines technological, educational/learning, and social affordances associated with the facilitation of team learning during technology-mediated collaborative problem solving. An empirical interpretive research approach using direct observation is used to interpret, evaluate and rate observable manifested behaviors and qualitative content (i.e., discussions) associated with team learning and team reflexivity. The theory of affordances and social impact theory are integrated to develop a conceptual model that asserts that collaboration mode (collocated vs. non-collocated and videoconferencing supported) will dictate the quality of information exchange, progressive elaboration of ideas, and the social processes that influence team learning. Team learning is then suggested to give rise to task and social reflexivity behaviors aimed at monitoring and evaluating acquired understanding, adaptation of task strategy, and maintenance of quality intra-team interactions. Results showed that collocated teams did engage in better quality team learning behaviors. Further, persistent reflection on task progress and solution accuracy yielded better team productivity while maintenance of a mutual supportive and positive climate yielded higher perceived quality interpersonal interactions. Theoretical, methodological and practical implications of the study are also discussed.

Keywords: Situated Learning Theory, Social Impact Theory, Social Reflexivity, Task Reflexivity, Team Learning, Technology-Mediated Collaboration, Theory of Affordances

INTRODUCTION

Team learning and knowledge management has been viewed as a form of intellectual capital that can be leveraged to create organizational value and a competitive advantage (Sense, 2003, 2007). Consequently, it essential to develop a deeper understanding of the processes teams undergo to learn, create and share knowledge. Team configurations employed by organizations depend on opportunities and constraints of the organizational context which can lead to team formation decisions such as temporarily structured teams (Staples & Zhao, 2006; Bechky, 2003), traditional intact collocated teams (Desivilya & Eizen, 2005), or geographically dispersed and technology-mediated teams (Gibson & Gibbs, 2006; Nunamaker, Reinig, &
Briggs, 2009). These teams provide leverage derived from their collective knowledge and skill bases that afford execution of and completion of tasks that would otherwise exhibit greater difficulty when attempted by individuals alone (Kanawattanachal & Yoo, 2007; Littlepage et al., 2008).

In a review of research on team learning, Wilson, Goodman and Cronin (2007) argued that inconsistent definitions of “team learning” was a significant factor in the inability to effectively test it and derive a coherent and consistent research stream on the topic (cf. Edmondson, Bohmer, & Pisano, 2001; Ellis, Hollenbeck, Ilgen, & Porter, 2003; van der Vegt & Bunderson, 2005; Wong, 2004). Specific problems attributed to inconsistent findings in research on team learning include 1) inconsistency between level of theory and level of measurement (e.g., individual level measures used with team level theory), 2) omission of critical observable learning behaviors due to inaccurate construct definition, and 3) failure to look at learning as a dynamic evolving process. Wilson, Goodman, and Cronin (2007) called for a process analysis approach (i.e., assessment of discourse and behavior) in investigating team learning. By directly observing team learning behaviors, the current study seeks to identify exactly how the team learning process is either enhanced or constrained in real time. In addition, this study argues that prior research on assessing acquired knowledge have relied on post-task measures which are essentially limited to measuring explicit knowledge. In their discussion on knowledge creation theory, Nonaka and von Krogh (2009) noted that explicit knowledge is knowledge that can be uttered, formulated in sentences, and captured in drawings and writing. In contrast, tacit knowledge is rooted in action, procedures, and routines. In other words, tacit knowledge is not spelled out; instead, it is revealed through its use to perform an action. The direct observation approach used in this study addresses a gap in prior research in that it offers the opportunity to account for variation attributed to tacit knowledge (via behavioral observation) that would otherwise be overlooked. As such, the current study also addresses the need to confirm the organizational knowledge creation theory’s view that tacit and explicit knowledge are not separate but “mutually complementary” in that they dynamically interact with each other in creative activities by individuals and groups (Nonaka & von Krogh, 2009).

The purpose of this study is to extend current research on technology-mediated team performance by examining the effects of collaboration mode (collocated or technology-mediated non-collocated) on team interactions during team learning. In addition, meta-cognition (i.e., monitoring, assessment and regulation of a learning situation) in the form of task reflexivity and social reflexivity is presented to show how these behaviors mediate the effect of team learning on productivity and perceived interaction quality. The following research questions are addressed in this study:

1. Through what specific mechanisms (e.g., shared interpretation, motivation, efficacy, social influence, process affordance etc.) does collaboration mode impact team learning behaviors?
2. Does effective team cognition involve both cognitive and meta-cognitive processes?
3. How is knowledge that is acquired from learning behaviors effectively utilized and transferred to the task performance process?

As suggested by Kirshner and Whitson (1998), this study views team learning as both a cognitive process (i.e., information exchange, interpretation, experimentation, reflection, and codification into a shared mental model) and a situated learning process (i.e., social interaction and collaboration structured and supported by its environmental context). In what follows, the next section reviews the relevant literature on team learning and potential influences on team member behavior. This is followed with discussions of the research model and hypotheses and the research methodology. The remaining sections present the results and discussion, implications and conclusion.