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Grasping the dynamic complexity of team learning: An integrative model for effective team learning in organisations

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ABSTRACT

In this article we present an integrative model of team learning. Literature shows that effective team learning requires the establishment of a dialogical space amongst team members, in which communicative behaviours such as 'sharing', 'co-construction' and 'constructive conflict' are balanced. However, finding this balance is not enough. Important questions such as 'communicating about what?', 'communicating with whom?' and 'communicating for what?' remain crucial. Five other process variables 'team reflexivity', 'team activity', 'boundary crossing', 'storage' and 'retrieval' are identified. Besides the core process variables, our model organises the most important inputs, catalyst emergent states and outputs of team learning.

1. Introduction

In the second part of the previous century a growing wave of continuous change stirred our society. This wave altered the basic conditions of organisations around the globe (Argyris & Schön, 1978; Weggeman & Boekhoff, 1995). Leaders acknowledged that change had arrived, but many lacked the competence to transform their organisation accordingly. Therefore, research on how organisations could shift from static entities to reflexive and continuously transforming systems was promoted. Step by step the importance of effective teams for the creation of flexible organisations was shown (Van Hootegem, Van Amelsvoort, Van Beek, & Huys, 2005).

Today, *teamwork* is ubiquitous in organisations (Cohen & Bailey, 1997; Lawler, Mohrman, & Ledford, 1995) and science provides an extensive body of literature on how it can be organised effectively (Johnson & Johnson, 2003; Poole & Hollingshead, 2005; Turner, 2001). Despite the amount of studies on teamwork and despite the complexity of the subject, some have succeeded in keeping the overview and integrating the results of their predecessors (e.g., the reviews of Cohen & Bailey, 1997; Mathieu, Maynard, Rapp, & Gilson, 2008; Shea & Guzzo, 1987; Sundström, McIntyre, Halfhill, & Richards, 2000; West, Tjosvold, & Smith, 2003, etc.).

Team learning is important for teams to learn how to work together effectively and for organisations to manage their continuously changing environment (Senge, 1990a; Zaccaro, Ely, & Shuffler, 2008). Therefore, teams are not only considered to be important working units, but also increasingly considered to be the important learning units within organisations (Caldwell & O'Reilley, 2003; Kirkman, Rosen, Tesluk, & Gibson, 2004). Senge stated in 'The fifth discipline' that "*team*

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learning is vital because teams, not individuals, are the fundamental learning unit in modern organization. This is where the rubber meets the road; unless teams can learn, the organization cannot learn." (1990a, p. 10). Since this classical work, research on the subject grew substantially across disciplines, such as management sciences, economics, organisational theory, communication sciences, political sciences, information sciences, educational sciences, psychology, sociology, etc. (Akkerman et al., 2007; Poole, Hollingshead, McGrath, Moreland, & Rohrbaugh, 2004). Team learning appeared to be a key driver for both individual learning (Slavin, 1996; Sweet & Michaelsen, 2007), team effectiveness (Crossan, Lane, White, & Djurfeldt, 1995; Van den Bossche, Gijselaers, Segers, & Kirschner, 2006; West, 1999) and organisational learning and innovation (Crossan, Lane & White, 1999). However, compared to research on teamwork, research on team learning increasingly lacks integration (Kozlowski & Bell, 2008). The interdisciplinary attention for the subject on team learning is on the one hand desirable, because it fosters both rapid growth and diversity in perspectives. On the other hand it is becoming problematic, due to a lack of disciplinary boundary crossing and integration of knowledge. In fact, the multidisciplinary interest in team learning is heading for a Babel-like confusion. A good illustration of the current confusion of tongues are the 30 different definitions/descriptions of team learning we encountered in literature (the complete list is obtainable from the authors). Definitions range from team learning as "*an ongoing process of reflection and action characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions.*" (Edmondson, 1999, p. 353) over team learning as "*a change in the group's repertoire of potential behaviour*" (Wilson, Goodman, & Cronin, 2007, p. 1043) to team learning defined "*in terms of both the processes and outcomes of group interaction. As a process, group learning involves the activities through which individuals acquire, share and combine knowledge through experience with one another. Evidence that group learning has occurred includes changes in knowledge, either implicit or explicit, that occur as a result of such collaboration.*" (Argote, Gruengeld, & Naquin, 2001, p. 370). Moreover, different labels are used to address the same concept (team learning, group level learning, cooperative learning, adaptive team performance, adaptation, group level information processing, collective induction, etc.).

As research about team learning continues to advance in each of its discipline-based subfields, it becomes increasingly important to integrate what is already known (Edmondson, Dillon, & Roloff, 2007; Mohammed & Dumville, 2001; Wilson et al., 2007). The goal of this article is to answer the current lack of integration by developing a theoretical framework for team learning that integrates existing theoretical conceptions and empirical findings.

Below, we first present the dynamic and complex systems paradigm that guided our integrative effort. Second, we explain how we executed the interdisciplinary review that resulted in our team learning model. We describe the procedures that served for gathering and analysing the most relevant books, chapters in books, and articles on the topic. Third, we present our integrative and systemic model by answering three questions: What are team learning processes? What are team learning outcomes? And what influences team learning? Going beyond inputs and outputs, and explicitly focusing on team learning processes is important because it helps us to understand why team learning outputs come about and, more specifically, it shows the systematic reasons for a particular occurrence or non-occurrence of team learning (Wilson et al., 2007). We conclude with a discussion and suggestions for future research.

2. A 'complex and dynamic systems' paradigm

In social sciences every study is biased by the coloured glasses of prejudice scientists inevitably wear. Kuhn (1962) was the first to call these glasses 'a paradigm'. He described how paradigms determine which research questions, research methods and research outputs are considered legitimate in a certain research field. Since legitimacy cannot be accounted for by rules, a paradigm is broader, deeper, more binding and more complete than any set of rules can ever be. It is the fundamental vision that makes our rules to a coherent whole with the power of imagination (Kuhn, 1962).

Researchers cannot help having a paradigm, but they should try to surface it. However, because an in-depth analysis of our paradigm is beyond the scope of this article, we limit our writings to a brief discussion of two theories that frame our thinking the most: General System Theory (GST) and complexity theory. In the context of team learning, we follow the example of several authors that have worked from these frameworks in the past (Arrow, McGrath, & Berdahl, 2000; Dechant, Marsick, & Kasl, 1993; Homan, 2001; Poole & Hollingshead, 2005; Senge, 1990a; Vennix, 1996; etc.).

GST is described as the interdisciplinary study of human life and social organisation in terms of systems (Bertalanffy, 1968). Complexity theory studies systems that have many interacting variables and no simple internal and/or external unidirectional cause and effect relationships (Jörg, 2004). Both theories emphasize a shift in thinking from seeing parts to seeing the organisation of parts, recognizing that the interactions of those parts are not static and constant, but dynamic processes (Laszlo, 1995). Because we adopt a dynamic and complex systems perspective we see teams as complex open systems with permeable boundaries that interconnect interdependent subsystems (team members) with each other and with their temporal, socio-cultural, physical, economical and organisational supra-system (environment). We define the concept 'team' accordingly: "*A team is a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems.*" (Cohen & Bailey, 1997, p. 241).

Both GST and complexity theory denounce the fragmentation in classical science. Classical science in its diverse disciplines generally tries to isolate the elements of the observed universe in order to grasp its dynamic complexity. GST and complexity theory state, on the contrary, that for an in-depth understanding of reality the understanding of elements is not sufficient