

Facilitating Collaboration: Potential Synergies Between Collaboration Engineering and Computer- Supported Collaborative Learning

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ABSTRACT

This article explores the potential synergy between computer-supported collaborative learning (CSCL) and collaboration engineering (CE). Both areas pursue the goal of understanding how to manage interactions in collaborative groups to achieve shared understanding, reduce process losses, and improve performance. By analyzing the research in the two areas, the authors identify several topics where exchange of research findings would be of mutual benefit. For example, research on CE can inform collaboration script research on reducing learners' cognitive load, providing sufficient guidance on the use of tools, and specifying the instructor role during the collaborative learning process. Similarly, collaboration script research can provide useful insights to CE on the appropriation and internalization of effective support strategies. CE research could also learn from script research on training group participants into specific roles. Further challenges include designing scripts that balance restrictiveness and flexibility and refining the theoretical foundation of the two research areas.

KEYWORDS

Collaboration Scripts, Group Facilitation, Group Support Systems (GSS), Virtual Teams

1. INTRODUCTION

The use of ICT for supporting collaboration has become an integral part of everyday practice, both in professional work and social life. Reflecting this, academic institutions are increasingly incorporating different forms of *Computer-Supported Collaborative Learning* (CSCL) in their study programs. This falls within the broader trend of focusing on various modes of digital learning (also referred to as e-learning or online learning) in educational programs.

CSCL as a research area dates back to the early 1990s. With dedicated international conferences and journals, CSCL is today an established multidisciplinary field. CSCL is focused on practices of joint meaning-making supported by technological tools (Stahl, Koschmann, & Suthers, 2006). It is commonly acknowledged by CSCL scholars that it is not sufficient to simply provide learners with technology but is also necessary to make sure that effective collaborative interactions are taking place (Kreijns, Kirschner, & Jochems, 2003). Thus, research has focused on scaffolding of collaborative learning (Zheng, Huang, & Yu, 2014), i.e., providing complementary instructional support for guiding learners through tasks that exceed their current level of competence (Kobbe et al., 2007).

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An important form of scaffolding in CSCL is collaboration scripts, i.e., sets of instructions and prompts helping learners, for example, to distribute roles among them and sequence their learning activities (Dillenbourg, 2002; Fischer, Kollar, Stegmann, & Wecker, 2013; Kobbe et al., 2007). Empirical studies have documented that collaboration scripts have a significant potential in supporting CSCL learners (e.g., Noroozi, Weinberger, Biemans, Mulder, & Chizari, 2013; Rummel & Spada, 2005; Weinberger, Stegmann, & Fischer, 2010; Wichmann & Rummel, 2013), as compared to unstructured collaboration.

The focus in CSCL research on group collaboration through ICT resonates well with the research on group support systems (GSS), defined as “interactive computer-based environments which support concerted and coordinated team effort toward completion of joint tasks” (Nunamaker, Briggs, Mittleman, Vogel, & Balthazard, 1996, p. 165). Extensive research on GSS has shown how access to expert facilitators can be a bottleneck to successful use of these systems (e.g., Briggs, de Vreede, & Nunamaker, 2003; Anson & Munkvold, 2004). Thus, GSS researchers have focused on developing a solution for supporting group tasks that practitioners could successfully conduct without a professional collaboration facilitator. Developing over the last two decades, the area of collaboration engineering (CE) is concerned with the design of collaboration processes for frequently recurring collaborative tasks (Hengst & de Vreede, 2004; de Vreede, Briggs, & Massey, 2009). ThinkLets are the design patterns used in CE. A thinkLet is a “named, scripted technique for predictably and repeatedly invoking known effects among people working together toward a goal” (de Vreede et al., 2009, p. 124). ThinkLets include prompts scaffolding collaboration in the group and describe the choices in terms of the GSS tool being used (Briggs, et al., 2003). While promising results have been documented on the implementation of CE approaches, research on the adoption of these practices is still in an early stage and especially in educational contexts.

Given the common goal in CSCL and CE research of effectively supporting collaboration processes, the aim of this paper is to discuss whether and how the two fields could utilize each other’s research findings. For CSCL the main focus here is on the collaboration script research and for CE the focus is on the equivalent development and implementation of collaboration scripts in the thinkLets approach.

As the basis for the analysis, a representative sample of literature from each research stream was identified. This includes both foundational and ‘classic’ readings from the formative stages of the research areas, as well as recent journal and conference articles showing the latest developments and research focus. Existing review articles were used as an important source, supplemented with forward citation search from articles of highly-cited authors in the two research fields. Most of the articles were collected from highly ranked journals in information systems and educational research, and cover both conceptual and empirical research. This implies that the study was not intended as a systematic and exhaustive literature review, but rather aims to give an overview of the strengths, limitations and possible synergies of the two research areas as well as point out topics where more research is needed.

2. RESEARCH ON COLLABORATION SCRIPTS

2.1. Definition

A collaboration script is defined as a range of instructions identifying how learners should form groups and interact to solve the problem (Dillenbourg, 2002). Collaboration scripts are aimed at improving

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