Synchronous web-based collaborative writing: Factors mediating interaction among second-language writers

Hyeyoon Cho

University of Toronto, Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto, Ontario, M5S 1V6, Canada

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ABSTRACT

The present case study examined factors that mediated interaction among 3 Asian learners of English while they collaboratively wrote a summary using Google Docs and text-chat (Task 1) and Google Docs and voice-chat (Task 2) in the context of a debate club. Data were collected from multiple sources including a survey questionnaire, debate summaries, screen recordings, and stimulated recalls. The survey questionnaire elicited the learners' background information and individual goals for the writing tasks. Debate summaries, transcripts of screen recordings, and stimulated recall interviews were analyzed to investigate interaction patterns of the group and mediating factors in their collaborations. Firstly, the group's interaction patterns were identified by adapting Storch's (2002) dyadic interaction model, revealing a facilitator/participants pattern in Task 1 and a collaborative pattern in Task 2. Informed by activity theory, participants' goals and the goal-directed actions that influenced their collaborative writing activities were identified. Drawing upon an expanded activity model, the findings suggested that modes of communication, task representations, matches/mismatches between participants' self-perceived and other-perceived roles, and perceptions of peer feedback were the primary mediating factors on the qualities of collaboration. The findings may help explain why collaborative performance varies and may provide insights into how web-based collaborative writing activities can be designed and facilitated in L2 classes.

1. Introduction

Collaborative writing, defined as the coauthoring of a text by two or more writers (Storch, 2011), has become a common pedagogical activity in second-language (L2) classes, informed by sociocultural theory and supported by studies highlighting the importance of peer interaction in learners' language development (Donato, 1994, 2004; Storch, 2002; Swain & Lapkin, 1998). By interacting with others, learners have opportunities to test their hypotheses about language (Swain, 1985) and pool their knowledge about both language and writing through collective scaffolding (Donato, 1994).

Prior collaborative writing studies have investigated how interaction patterns influence L2 learners' writing performance and language learning in pair work in face-to-face interactions. Drawing on Damon and Phelps's (1989) indices of mutuality (i.e., the level of engagement with the partner's contributions) and equality (i.e., balanced control over the direction of the task), Storch (2002) examined interaction patterns in pair work in a tertiary English as a second language (ESL) class. By setting up mutuality and equality along two axes, the four quadrants in Storch's analytic framework defined four distinctive interaction patterns: collaborative, dominant/dominant, dominant/passive, and expert/novice. Storch concluded that only the collaborative and expert/novice patterns

were conducive to students' language learning. Adopting Storch's interaction model, Watanabe (2008) investigated how peers' language proficiency level influenced their interaction patterns, suggesting that both higher- and lower-proficiency peers could provide each other with learning opportunities if they shared ideas and contributed equally to tasks. Watanabe identified another interaction pattern she named the expert/passive pattern. This pattern of interaction differs from Storch's expert/novice pattern in that the novice remains passive despite the expert encouraging the novice to participate.

With the potential of Web 2.0 tools such as wikis, blogs, and social networking sites for L2 writing pedagogy (Storch, 2011), researchers have shown increasing attention to L2 leaners' web-based collaborative writing. To date, studies of web-based collaborative L2 writing have focused on four main areas: (a) processes of writing (e.g., Elola & Oskoz, 2010; Kessler & Bikowski, 2010); (b) quality of joint texts (e.g., Elola & Oskoz, 2010; Mak & Coniam, 2008); (c) learners' perceptions of online collaboration (e.g., Chao & Lo, 2011; Li & Zhu, 2013); and (d) interaction patterns (e.g., Bradley, Linstrom, & Rystedt, 2010; Li & Zhu, 2013, in press).

Among these research areas, relatively fewer studies investigated interaction patterns (Storch, 2013) in computer-mediated communication (CMC). Studies on interaction patterns have found evidence of collaborative patterns that are potentially conducive to language learning (e.g., Li & Zhu, 2013; Tan, Wigglesworth, & Storch, 2010). To facilitate and design web-based collaborative writing activity effectively, it is crucial to understand how learners interact during collaborative writing. Similar to face-to-face interaction, not all pairs or groups work collaboratively when using Web 2.0 tools (e.g., Bradley et al., 2010; Li & Zhu, 2013, in press). Some studies reported less collaborative patterns specific to text-based CMC. For example, Tan et al. (2010) investigated the effects of modes of communication on the nature of pair interaction and found a cooperative pattern in which participants divide the workload of the joint writing task and have minimum interaction in the writing process. Li and Zhu (2013) investigated CMC interaction among college-level EFL students and found a dominant/withdrawn pattern similar to the dominant/passive pattern that Storch (2002) previously identified in face-to-face interaction. However, because the nature of CMC makes it possible for the passive participant to be absent or withdrawn, such pattern may be more detrimental to students' learning than in face-to-face interaction.

Despite findings that L2 learners' interaction patterns vary when collaborating in pairs or groups, few studies have investigated how and why this may be, either in face-to-face or web-based settings. Storch (2004) argued that previous studies attempted to explain variations in interaction patterns based on personality differences (e.g., Villamil & De Guerrero, 1996) and differences in L2 proficiency (e.g., Kowal & Swain, 1994) but did not consider the factor of how students orient themselves to writing tasks. Storch used the lens of activity theory (Leont'ev, 1981) to show that participants' goals and motives help explain interaction patterns in face-to-face collaborative writing for a university ESL class. She suggested that interaction patterns are influenced by the nature of learners' goals and whether and how the group members' goals are shared. Li and Zhu's (in press) study, which investigated patterns of interaction when ESL students worked on collaborative wiki writing tasks, identified three sociocultural factors (i.e., goals, agency, and emotion) that help explain variation in group interaction patterns. For example, they posited that the collective pattern involves convergent goals, collaborative agency, and positive emotion. Li and Zhu's study explained dynamics of interaction only in the asynchronous CMC context. Peer interaction in synchronous CMC contexts, however, has not been investigated sufficiently. Some studies comparing different modes of communication observed that learners are more likely to pay attention to language and collaborate more in face-to-face interactions than in text-chat (e.g., Loewen & Wolff, 2016; Rouhshad & Storch, 2016). As voice-chat shares more features with face-to-face interaction than it does with text-chat (Jepson, 2005), it is a potentially useful and relatively unexplored mode of communication by which learners can interact to perform web-based collaborative writing. This study aims to investigate what factors influence a small group interaction in synchronous web-based collaborative writing by utilizing Google Docs and text-or voice-chats.

The present study is guided by activity theory, which is based on Vygotsky's (1978) principle that actions taken to achieve desired outcomes are mediated by psychological or material tools. While Vygotsky's work focused on individuals' mediated learning, Leont'ev (1981), an apprentice and later colleague of Vygotsky, further developed activity theory by differentiating between individual actions and a collective activity. Thus, the theory grew to emphasize the importance of purposeful human activity driven by shared culturally-constructed needs or motives (Wertsch, 1985). To fully understand individual actions, activity theory posits that it is crucial to know the context (i.e., a system of activity) in which these actions are embedded.

Engeström (2015) expanded Leont'ev's concepts of collective activity by making explicit various interactive elements (see Fig. 1). Activity is shaped by the interplay between subjects and objects, mediated by instruments. Activity is also mediated by "social
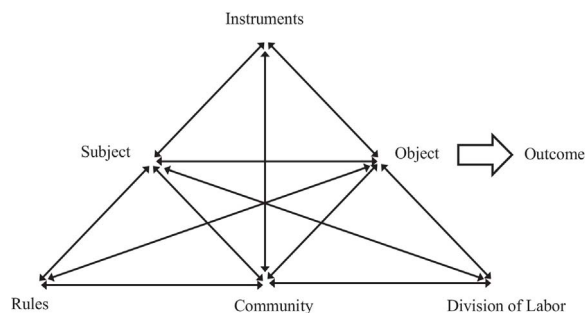

Fig. 1. The structure of a human activity system (Engeström, 2015).