POLYPHONIC DESIGN, CONDUCT, EXPERIENCE, AND EVALUATION IN CSCL CHATS

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Abstract. *The paper presents an approach directed towards enforcing a polyphonic structure to a CSCL chat, with the aim of increasing inter-animation and collaboration. Another leading idea of the paper is that we should start from the analysis of the polyphonic experience of the learners, which occurs when they are situated in the presence of multiple collaborating voices in small groups. A careful designed assignment, in which learners are assigned roles (or 'instruments' in the musical perspective) can induce a polyphonic structure along both longitudinal and transversal directions, as in musical counterpoint. Another major consequence is that such a design facilitates the analysis of the collaboration and personal contributions of students.*

Keywords: Computer-Supported Collaborative Learning (CSCL), Polyphonic analysis, Discourse analysis, Natural Language Processing, Conversation Analysis

1. Introduction

Instant messenger (chat) has been used in recent years for Computer-Supported Collaborative Learning (CSCL) for various types of small group assignments [1,2,3,4]. Meanwhile, among the main theoretical foundations of CSCL were proposed the social-cultural theory and the view of language as a tool idea of Vygotsky [5] and Bakhtin's dialogism [5,6,7,8,1,4].

Some developed CSCL systems offer interaction analysis tools of wikis and especially conversations, either spoken or through chat or forums: TATIANA [9], CORDTRA [10], VMT-Basilica [11], KSV [12], COALA [13], DIGALO [14], ColAT [15], the Scaffold-Argument visualization [16], and Dong's system [17], Some of these systems use several kinds of argumentation graphs, some of them in the idea of Toulmin [18], or more elaborated structures like the contingency graphs [19].

The approach presented in this paper is based on a totally different theoretical basis. It aims at identifying in chats a polyphonic structure and inter-animation patterns [4]. This theoretical framework was used as a starting point for the implementation of a series of systems for chat analysis: *Polyphony* [20], *PolyCAFe* [21], *ReaderBench* [22] and several others. The *PolyCAFe* system (**P**olyphonic **C**onversation **A**nalysis and **F**eedback generation) was designed for

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