Chapter X

Metacognition and Learners’ Interactions with a Web-Based CALL Grammar Exercise

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Abstract

The nature of learners’ interactions with the computer has received thus far relatively little attention in computer assisted language learning (CALL) research. In particular, few studies have investigated the role of metacognition, acknowledged in cognitive and constructivist learning theories as an important factor contributing to the learning outcome, in the processing of CALL tasks. This chapter reports on a qualitative study that examined the relationship between subjects’ metacognition and their interactions with a German language CALL grammar exercise. The data collected seem to indicate that the effective use of interactive aids is dependent on the extent of learners’ metacognitive knowledge. Conversely, it was observed that interactive aids had a positive effect on learners’ metacognition by supporting their strategy use and helping them build new metacognitive knowledge. Excerpts from subjects’ think-aloud reports and retrospective interviews will be presented to illustrate these insights.
Introduction

Kozma (1994) underlined the need to build media theory based on the study of how learners interact with the computer and how the attributes of computer media may influence learning. He wrote:

Understanding the ways in which students use the unique processing capabilities of the computer is essential to understanding the influence the computer may have on learning and to building media theory. The other half of media theory is understanding when and how to employ these symbolic and processing capabilities so that cognitive and social processes, so influenced, result in learning for certain students, tasks, and situations. (pp. 13-14)

Despite this call and the increasingly significant role of computer technologies and media in today’s foreign language learning environment, we still know relatively little about learner-computer interactions and how these influence or are influenced by the learner’s cognitive and metacognitive processes. For instance, which processes are involved? Which strategies do learners employ? What role does metacognition play in CALL? How do these variables affect learners’ interactions with CALL materials? Conversely, how is learning, and learners’ metacognition, mediated or affected by technology and the specific features of CALL materials? Some studies in the last two decades, indicative of the growing interest in these questions, have investigated learners’ strategies for CALL tasks and their use of online help (see Liou, 1997). In one such study, Chapelle and Mizuno (1989) studied English as a Second Language (ESL) students’ use of cognitive strategies (resourcing and practice) and metacognitive strategies (self-monitoring, self-management, and self-evaluation) while working on learner-controlled CALL grammar lessons. They uncovered that while some students used these strategies some of the time, they do not always employ optimal strategies. Another study (Hsu, Chapelle, & Thompson, 1993), based on the same CALL grammar lessons, showed that students do not always make full use of learning resources integrated into the CALL materials. While interest in the relationship between CALL, CALL-enabled cognitive support and strategy use is growing, there is still — as Liou (1997) points out — a sore lack of empirical data, and much research is needed to achieve more conclusive results.

This chapter reports on a study that seeks to contribute towards this growing body of literature. It is hoped that this qualitative study, which investigated the relationship between learners’ metacognition and their interactions with a Web-based CALL grammar exercise, will lead to larger studies and the subsequent construction of hypotheses. It focused on the subjects’ metacognitive processes and strategy use while performing the exercise, as well as how these affect or are affected by their use of interactive aids. It was underpinned by the constructivist theory of learning and instructional design (e.g., Wheatley, 1991; Jonassen & Reeves, 1996) and a model of metacognition in second-language learning proposed by Chan (2000).