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Looking into Students' Cognitive Processes in an Online Collaborative Learning Environment

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Abstract

The primary aim of this study was to examine how students' cognitive interactions influence the recognition processes of unconscious cognitive mechanisms appearing in the learning process of some mathematical concepts at the university level. These cognitive interactions are observed while students are reflecting on their responses to certain tasks in an online collaborative environment. The data analyzed is collected from a population of undergraduate students at the Austral University of Chile. The implemented methodology is supported by an introspective qualitative approach involving the verbalization of cognitive processes retrospectively during stimulated recall interviews. The selection of students who participated in the interviews was made after analyzing their responses and considering their richness in terms of differences and variations. Pairs of students who had responded in opposite ways and who had used different arguments were selected, with the aim of promoting their own reflection processes to contrast and resolve contradictions. Through the study, rich insights were gained into the cognitive processes examined. The analysis illuminated the processes through which students' previous unconscious misconceptions were examined, reflecting on previously unconscious and inadequate schemas. Cognitive interactions during the interviews progressively led to an adequate understanding of mathematical concepts. Within this progression, students developed their mathematical discourses. The findings confirm the results from similar research that states stimulated recall data gathered in collaborative environments could be useful in revealing relatively higher-level cognitive processes.

Keywords: stimulated recall interview, metacognition, mathematics in higher education