4TH GRADERS' WORKING ON A FUNCTIONAL CONTEXT: GENERALIZATION LEVELS AND INFLUENCE OF STIMULI

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In the last decades studies about the early algebra proposal have provided evidences of elementary students' algebraic skills since early ages. Some of these studies (e.g. Blanton & Kaput, 2011) address algebra from a functional approach. In this context, one of the main focus of interest is the students' ability to generalize a relationship between covariating quantities and how it is expressed by the students.

Within this approach, in our study we analyze the generalization levels shown by eight 4th grade Spanish students while working, during an interview, on a task based on the functional relationship x+2. The task had an inductive structure and asked about the relation between the hours of stay of a car in a parking lot and the money to be paid. At the same time we study how the stimuli made by the interviewer (e.g. suggest, summarize information, redirect, etc.) influence the manifestation of generalizations.

The results indicate that all the students manifested several generalization levels while solving the task. We detect facility to express the functional relationship by referring to specific numbers. When being asked about indeterminate quantities, they manifested generalization by means of referring to generic examples or using verbal expressions to allude indeterminacy. However, most of them required the interviewer's stimuli. Four students accepted the use of a symbolic representation of the relationship when suggested and were able to explain its meaning or reproduce it with another letter.

Our results evidence that the proposal of a functional task with inductive organization was useful to structure students' ideas and reasoning with the final purpose of expressing the generalization of the relationship involved. At the same time they show that stimuli like suggesting processes or redirecting observations were determinant to obtain different answers from the students, to consolidate their ideas, and to provoke and promote the mobilization between generalization levels.

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References

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