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Relationship between inductive arithmetic argumentation and deductive algebraic proof.

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Summary: In this paper, we present a cognitive analysis of the relationship between the argumentation process leading to the construction of a conjecture and its algebraic proof in solving calendar algebra problems. To solve this kind of problem, students encounter two sources of potential difficulties: the shift from using arithmetic in the argumentation to using algebra in the proof and the shift from an inductive argument towards a deductive proof. Thus, the aims of this article are to describe these cognitive difficulties and to show how students overcome them. Methodologically, we compare students' problem solving process corresponding to three problems presented in the first four lessons of a teaching experiment. The analysis and comparison between these three resolution processes is performed using Toulmin's model.

Classification: H33 M93 F73 E53

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