Rescuing Rabbits and Geometric Shapes: Computational Thinking in the 2nd and 3rd Grades of Elementary School

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This study analyzes the contributions of an instructional material that implements computational thinking (CT) to teach introductory programming concepts to 2nd- and 3rd-grade elementary school students. CT involves problem solving in ways similar to the processes used in Computer Science, with decomposition, pattern recognition, abstraction, and algorithms as its main pillars. Adopting an applied qualitative approach, the project comprised the following stages: a theoretical review; development of the instructional material; implementation of the material; post-implementation interviews; and analysis of the results obtained. The research was conducted at a public municipal school and the participants were 2nd- and 3rd-grade students. The materials developed focus on “algorithms” as the target knowledge domain and address skills established in Brazil’s National Common Core Curriculum, according to the corresponding grade level. They consist of path-based challenges completed on a board using command cards and 3D game pieces. The results indicate that a substantial proportion of students understood the purpose of the materials and were able to complete the proposed challenges, even without prior experience with CT activities. In addition, students were able to identify possible errors made during the activities that hindered successful completion of the tasks. Overall, the materials were well received, their elements were easily understood, and they prompted a moderate increase in students’ interest in the concepts addressed. Based on these findings, several avenues for future work can be identified, including refining and developing new materials, as well as teacher education initiatives and further research that examines learning-related issues in greater depth.

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