

# Computational Thinking in Rural Education: Evidence of Gains in Problem-Solving Abilities

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(Beta)

[Elkin Martínez-Caro](#) ; [Miguel Garcés-Prettel](#)  [All Authors](#)[Abstract](#)[Authors](#)[Keywords](#)[Supplemental Items](#)[More Like This](#)**Abstract:**

Most research on computational thinking has been conducted in urban or technologically advantaged settings, leaving its applicability in rural environments largely unexplored. This study addresses that gap by evaluating the effectiveness of a computational thinking-based pedagogical strategy on problem-solving skills among tenth-grade students in a rural Colombian school. Using a quasi-experimental design with control group and pre/post-test measurements, three dimensions were assessed: computational concepts, required tasks, and evaluative capacities. The intervention, consisting of six constructivist-oriented sessions mediated through the MakeCode environment, led to significant improvements in the experimental group. A repeated measures analysis of variance confirmed substantial effects across all dimensions, with no significant influence from sociodemographic or academic variables. These findings indicate that complex problem-solving skills can be developed through accessible pedagogical strategies within rural school contexts characterized by limited technological infrastructure. The study provides empirical evidence supporting the integration of computational thinking in rural education through replicable and context-sensitive approaches.

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Authors ^

[Elkin Martínez-Caro](#)

Faculty of Education, Universidad Tecnológica de Bolívar, Cartagena, Colombia

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[Miguel Garcés-Prettel](#) 

School of Digital Transformation, Social Communication Program, Universidad Tecnológica de Bolívar, Cartagena, Colombia

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