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Building Computational Thinking in Primary Education

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Abstract

This study compares two didactic approaches to teaching the basics of programming and developing computational thinking in primary education: the internationally established Code.org platform and a regional methodology, "Informatics with Emil," currently utilized in the Czech Republic and Slovakia. The primary objective is to analyze how these approaches support pupils' cognitive processes, using the revised Bloom's taxonomy as an analytical framework. Code.org provides an open, highly motivating environment that employs block-based programming to enable pupils to quickly construct their own digital products, thereby focusing predominantly on the application and creation levels. In contrast, the "Informatics with Emil" methodology is characterized by a systematic progression of tasks, placing strong emphasis on planning, methodological justification, and formative assessment. Consequently, it significantly bolsters the conceptual and metacognitive dimensions of learning at the comprehension, analysis, and evaluation levels. The comparison reveals the complementary nature of both approaches. Code.org offers expansive opportunities for motivation and creative application, whereas "Informatics with Emil" delivers a robust didactic foundation for the systematic development of computational concepts and the reflection on applied problem-solving procedures.

Keywords: Algorithmization; Block-Based Programming; Cognitive Development; Digital Literacy; Revised Bloom's Taxonomy