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Title:

Mathematical Model of Decision-making in an Unplugged Computational Thinking Activity

ABSTRACT

Computational Thinking (CT) is pervasive in our daily lives and is useful for problem-solving. Decision-making is a crucial part of problem-solving. In this paper, the decision-making processes during an unplugged CT activity are delineated via mathematical modelling, which is useful for informing educators who may wish to explain to their learners about the various aspects of CT which are involved in the unplugged activity. In the extant literature, problem-solving strategies in educational settings are often conveniently attributed to intuition; however, learners who are also novice programmers might have difficulty describing about their intuitive insights during problem-solving using natural language (such as English), and subsequently convert what has been described using words into software code. Hence, a more analytical approach using mathematical equations and descriptions of CT is offered in this paper as a potential form of rudimentary scaffolding, which might be useful to facilitators and learners of CT-related activities. The mathematical equations of the decision-making processes posited in this theoretical manuscript may serve as a base for novice programmers, regardless of the programming language they prefer, should the facilitator wish to ask the learners to embark on a software programming activity that is closely associated to the unplugged CT activity.

Keywords: Computational Thinking; Unplugged Computational Thinking Activity; Mathematical modeling; Problem-solving; Decision-making

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