Using Embodied Cognition in the Instruction of Abstract Programming Concepts

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Abstract: We present two models, physical and imaginary, for implementing embodied cognition during the instruction of abstract programming concepts. We examine previous studies using embodiment in the instruction of reading (Glenberg et al., 2004), mathematics (Goldstone & Landy, 2010), and science (Chan & Black, 2006a, 2006b) as a foundation for proposing an embodied instruction of programming. We discuss the embodied instruction of abstract symbols in mathematics and suggest that the nature of programming a video game (Fadjo et al., 2009a, 2009b) provides adequate grounding (Barsalou, 2008) for the instruction of abstract conditional statements. We suggest that an embodied form of instruction integrates the actions prevalent in two-dimensional video games with the instruction of abstract programming concepts. We discuss our findings on using Instructional Embodiment (Fadjo et al., 2009a) to improve novice programmer's tracing and conditional logic thinking skills.