Moving Toward the Right Statement: Effects of Grounded Embodied Cognition on Computational Thinking

Cameron L. Fadjo

Institute for Learning Technologies Department of Human Development

John B. Black

Institute for Learning Technologies Department of Human Development

Abstract: A grounded embodied approach to the instruction of computational abstractions provides concrete representations for characteristically abstract symbols. If the perceptual symbols that comprise a pre-defined scenario are fundamentally grounded in human behavior (e.g. walking), does the mere act of embodiment influence how these behaviors are represented in a computational artifact? Prior research has demonstrated that an embodied approach to the instruction of computer programming results in artifacts that implement more complex code structures. The current study examines how grounded embodied cognition influences the representation of movement in computational artifacts. Using the Instructional Embodiment (Fadjo et al., 2010) framework, participants engaged in learning activities through physical and imagined embodiment (Direct Embodiment with Explicit Imagination) or imagined embodiment without physical enactment (No Embodiment with Explicit Imagination). Findings suggest that physical enactment with explicit imagination during learning results in control abstractions that represent movement with greater precision than imagination alone.