

**Embodying learning through physical activity in preschool children**

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A series of studies was conducted using the evolutionary upgrade of cognitive load theory advocating that the use of the human movements can assist learning of complex cognitive tasks (Paas & Sweller, 2012). More specifically, it is argued that the use of biologically primary knowledge (i.e., naturally evolved information) is a significant adjunct of biologically secondary knowledge (i.e., reading or mathematics). This tenet is further supported by the theoretical framework of embodied cognition, stating that action and perception are inextricably bound (Barsalou, 2008; Wilson, 2002).

Four intervention studies were conducted in preschool children examining the effectiveness of body movements in the form of physical activity on learning language, geography, mathematics, and science.

Children were randomly assigned to the experimental conditions in which movements were meaningfully related with the learning domains (integrated condition), unrelated to the learning task (non-integrated condition), or there were no movements involved (control condition).

After the intervention children were administered an immediate and delayed test, and were asked to evaluate their interest in the instructional method. Children's intensity levels of physical activity were measured.

Results showed that children in the integrated conditions performed better than children in the control conditions. In addition, children in the active conditions (integrated and non-integrated) scored higher on perceived interest of learning than children in the control conditions.

A new instructional method is suggested, with integrated movements meaningfully related to the learning tasks, for improved health and cognition.