

Movement, Dancing and Physics Learning

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The research is based on a cognitive paradigm, embodiment that regards the brain and the body as one unit. The underlying assumption of the research is that physical experience can be used as a unique resource for learning complex concepts in physics by associating them with daily bodily activities. The research goals were: 1. Development of the approach 'Embodied Pedagogy for Teaching and Learning Physics', which combines movement and physical activities in learning concepts and principles in physics. Some of the components of the approach include improvisation in movement, selected aspects of the Feldenkrais method, techniques combining learning with walking, and relaxation. The main principle of the embodied pedagogy is "experience first, signify later." 2. Research on learning and teaching processes by enacting the 'Embodied Pedagogy for Teaching and Learning Physics'. We explored, through two case studies, the potential of this embodied pedagogy for learning two complex physics concepts by high-school students: 'Balance' and 'Angular Velocity.' Throughout the entire learning process, the contribution of the instructional approach to the students' learning and understanding of the concepts was evident. Moreover, in their summative projects, the students not only expressed a deep conceptual understanding but also creativity and a philosophical and effective depth. Similar to my students who summarize their learning in creative ways, the video clip summarizes my research via dance. It is consistent with my belief that we can learn and explain science through movement.