1067-I1-2318 Susan L. Addington* (saddingt@csusb.edu), Math Dept., CSUSB, 5500 University Pkwy., San Bernardino, CA 92407, and David Dennis (david.dennis@earthlink.net), 4249 Cedar Dr., San Bernardino, CA 92407. Physical Math for Elementary Teachers: Reconnecting Mathematics with the Body Using Mirror Neurons.

Neuroscience is discovering that conscious, rational thought is executed by "recycling" neurons whose function was evolved for physical action and sensory input. We know that small children learn with their bodies. However, the curriculum for elementary school has narrowed to a focus on written symbols, having eliminated physical calculating devices and most measurement. A new book for future elementary teachers, Measuring the World, emphasizes the physical basis for elementary mathematics. To help teachers reconnect with the understanding built into their bodies and brains, physical activities are central: walking and turning, measuring things, making objects. We discuss activities for teaching angles, a topic that is poorly understood by many students. Many teachers of teachers are not aware that this is a difficult concept. One of the activities has students make their own protractors by folding paper. The demonstration is on video so that everyone can see and imitate what to do. This is facilitated by the recently discovered mirror neurons, which allow the viewer to imitate an observed action. ("Monkey see, monkey do.") Video is not only stunningly effective, but it also makes it much easier for traditional-style teachers to include activities in their classes. (Received September 22, 2010)