

Cross Cultural Comparative Effects of an Early Science and Measurement Learning Study on 4th grade children's achievement

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Abstract: Two science-learning studies were carried out in the U. S. and Taiwan, to examine whether 4th grade children could benefit from a causally coherent presentation of core concepts explaining molecules and the role that heat energy plays in controlling state of matter. The first study varied the inclusion/exclusion of static versus dynamic graphic presentations that accompanied learning modules. The second varied whether concepts of measure were explicitly taught before science learning. Children in both countries performed exceeding well on concepts thought to be difficult in learning about the speed and movement of molecules. Taiwanese children received far more rigorous training on measurement concepts than U.S. students. If measurement concepts were not taught explicitly, U.S. children lost ground rapidly. With explicit instruction, U.S. students improved but did not quite equal Taiwanese students. The role of time on task and diversity of problem presentations are discussed.