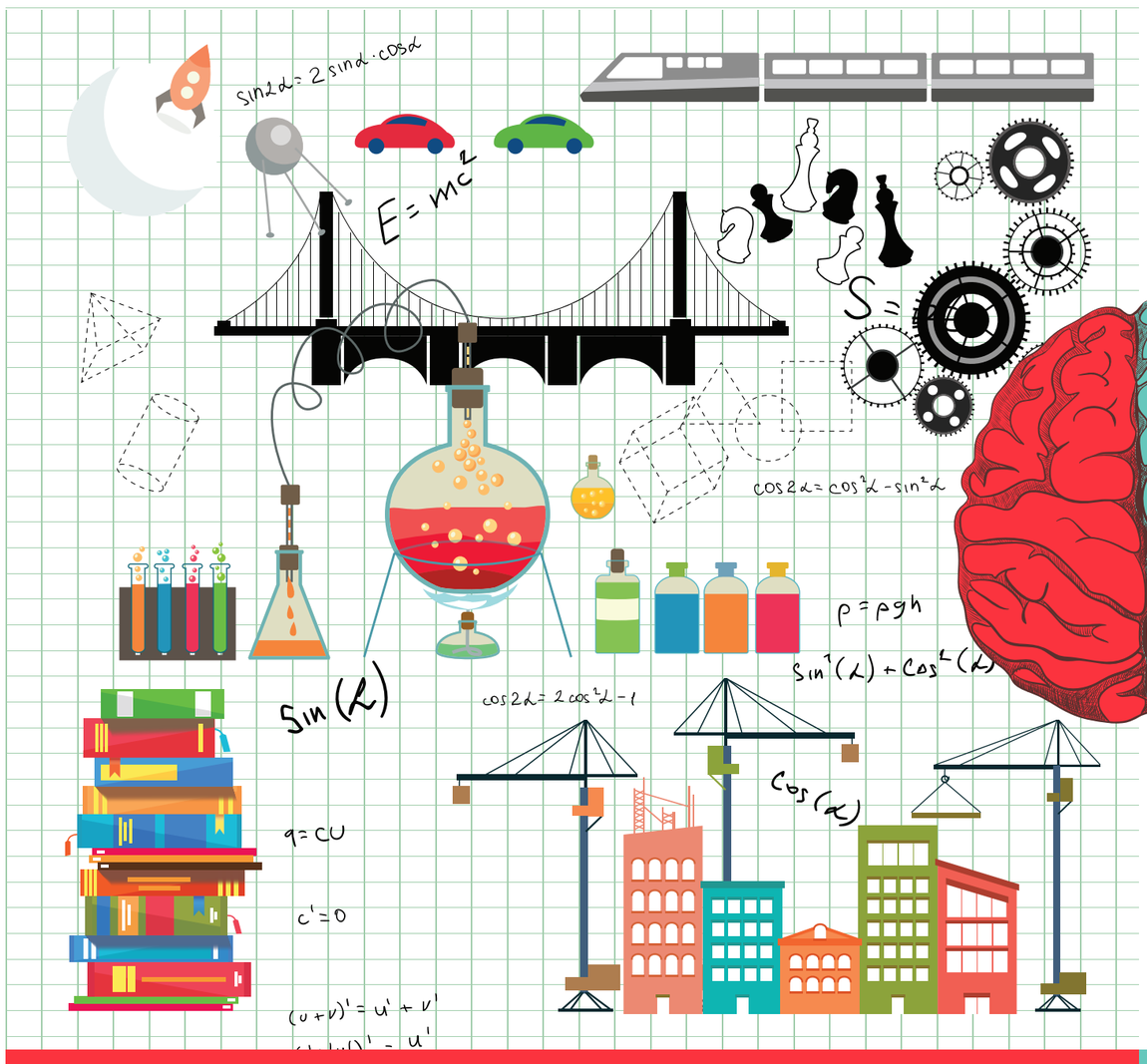
THE SCIENCE BEHIND *hands-on learning*

WHY DOES **HANDS-ON LEARNING** MATTER

It is often thought, the more senses you engage while learning, the more likely you are to retain the information being processed. One study took this idea further and analyzed brain scans and quiz results with students who used hands-on manipulatives vs. those who did not. The study found increased brain activity for those engaging in the hands-on activity and higher quiz scores. In short, the students did in fact "learn by doing."



LEFT-BRAIN/RIGHT-BRAIN: Scientific data supports the belief that some brain functions are lateralized–controlled by–one side of the brain more than the other. But science has not proved that individuals favor either the left OR right side of their brains. In 2013, neuroscientists at the University of Utah studied more than 1,000 human brain scans to determine whether one side of the brain was more active or connected than the other.

While the study did find that certain brain functions are more lateralized than others, the authors concluded that "such connections do not result in a subject-specific global brain lateralization difference that favors one network over the other." In other words, the notion of some people being more left-brained or right-brained is not scientifically accurate, but is commonly used as a metaphor for behaviors and preferences.

www.doi.org/10.1371/journal.pone.0071275

HANDS-ON EXPERIENCES AND THE BRAIN

A 2015 University of Chicago study explored the importance of physical (hands-on) experience in science learning. Using brain imaging and field experiments, the study sought to discover what impact hands-on experiences had on students' learning.

The conclusion of the study is no surprise to those with anecdotal evidence of the benefits of hands-on learning in the science classroom.

The study states, "This finding specifies a mechanism underlying the value of physical experience in science education and leads the way for classroom practices in which experience with the physical world is an integral part of learning....We have shown that brief, meaningful physical experience with science content enhances learning by activating sensorimotor brain systems used to execute similar actions in the past."

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BENEFITS OF HANDS-ON LEARNING

Increased Learner Engagement

Improved Critical-Thinking Skills

Higher Exploratory Learning Skills

Environment for Instant Feedback