

Brain-Based Research Supports Hands-on Learning

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How Students Learn

Rapid advances in brain-based imaging teach us more and more about how the brain works. Of special interest to educators is what brain structures and processes can tell us about how students learn. Indeed, a review of the recent literature reveals several key elements:

- 1) Students retain information longer if what they are learning is “meaningful” to them
- 2) Learning largely depends on the brain’s ability to make connections between new and familiar “patterns”
- 3) Engaging multiple modes of learning while using as many media and group configurations as possible increases the chance of connecting with students in ways that they will find meaningful and therefore retain

Information that students learn absent a connection to their lives is likely to be forgotten. Perhaps more problematic than that, if students are not “engaged” with their subject matter, discipline problems may arise to disrupt the course of instruction. But, “because the brain is constantly searching for meaning, students will give their attention to what they find personally meaningful. And the more meaningful it is, the more engaged they will become” (p. 15*). So we need to find the best ways to “connect” to student interests that may range widely among our increasingly diverse student bodies. Moreover, as teachers, it is imperative that we build on the prior knowledge students bring to their classroom experience. “Brain scans have confirmed that when new learning is readily comprehensible (makes sense) and can be connected to past experiences (has meaning), there is substantially more cerebral activity, followed by dramatically improved retention” (p. 49).

We also know that “by manipulating the new learning in various ways through different processes and sensory modalities, the learner builds more interconnections within and between neural networks. This mass of interconnections provides multiple pathways for retrieving the new learning from long-term memory” (p. 55).

What Is The Take Away?

By using hands-on activities with students—activities involving a variety of learning modalities that might include watching, listening, speaking, writing, moving around physically, and handling and marking physical objects—in individual and small-group settings, we are more likely to connect to diverse student interests and modes of learning. By making cognitive, social, and kinesthetic connections for students, we increase the likelihood that they will retrieve and build upon that learning in the future. These meaningful experiences ultimately facilitate student engagement and long-term retention, and, as a welcome side effect, decrease the likelihood of

discipline problems. Using hands-on programs that incorporate a variety of learning modalities does not guarantee success, but it certainly increases the chance you will engage students in meaningful ways.

Citation

** All page references are to Differentiation and the Brain: How Neuroscience Supports the Learner-Friendly Classroom, Sousa & Tomlinson, Solution Tree Press. 2011.*