

The Action-Reflection Cycle in the Brain



“The potentiation of a new brain requires a self-reflective mind.”

~ Rock and Paige, Coaching with the Brain in Mind

The importance of reflection in learning and change has been well-researched over the years. Over 20 years ago, David Kolb presented a powerful model of the experiential learning cycle that is widely used to this day. Known to experiential educators around the world, it looks like this:

1. Person takes some sort of action, does an activity
2. Person reflects on what was learned by doing this action
3. Person now takes new action(s) based on the learning

In practice in experiential education, it often looks like structured activities which are usually facilitated (anything from a seated two-person communication process to a high ropes course to a wilderness solo), followed by time dedicated to reflection, with further structures for understanding what happened and what was learned (this can be done by multiple modalities including paired sharing, journaling, art), and then generally a commitment to bringing this learning into a person's day-to-day life, or, in longer training sessions, within the workshop itself for more action and more reflection. This results in a sort of “upward spiral” of learning.

In 2002, James Zull brought the theory up to date by showing the biology behind it, and proving that this cycle “creat(es) conditions that lead to change in a learner's brain.” Here is how it seems to work, according to Zull:

1. We experience something. In other words, we DO something (anything), and the motor cortex carries out plan of action.
2. When we recall the experience, the sensory cortex receives input from the five senses. The more we activate all five senses in this part of the process, the more we are able to understand about the experience. We actually don't think about experiences without re-experiencing them in the brain. Thus, reflection strategies that tap into the full sensory experience (visual, auditory, smell, taste, touch, as well as emotion) are most effective.
3. When we reflect on the experience the back integrative cortex makes sense of the input from the sensory cortex (see step 2 – the more you give it to work with, the better).
4. When we further use this reflection to develop a deeper understanding of who we are as a person (and therefore how to move forward), the frontal integrative cortex develops a plan of action. Deeper reflection, more well-thought out and therefore effective further action.
5. When we move forward and see how it goes the motor cortex once again carries out plan of action.
6. And so on, repeating – the “upward spiral” of learning.

Without reflection, we only have endless input. The brain needs to recall what happened in order for the frontal integrative cortex to develop the most effective plan of action. In other words, in order to learn, grow and develop.