Ten Ideas Worth Remembering About How the Brain Learns

1. All learners have prior knowledge that affects how they respond to our teaching.

2. The prior knowledge of learners is not an ether; it is physical, real, and persistent.

3. If we ignore or avoid prior knowledge, it will hinder our teaching.

4. Prior knowledge is complex and personal.

5. Learners are not necessarily aware of all their prior knowledge.

6. Writing assignments are helpful in discovering learners’ prior knowledge.

7. Prior knowledge is likely to be concrete; teachers should begin with the concrete.

8. Concepts and broad principles should be developed from specific examples.

9. Teachers should expect and respect the tangles; it is not our job to set them in order.

10. Prior knowledge is a gift to the teacher; it tells us where and how to start.

Adapted from Ch 6: What We Already Know, in James Zull’s The Art of Changing the Brain (2002).
How the Brain Learns: Implications for Teachers

7 Tips for Building Connections to Neuronal Networks

_The single most important factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly._

~ David Ausubel, educational psychologist

1. **Use broad strokes when searching for relevant experience.** Presenting information in multiple modes (sounds, art, poetry, pictures, charts, colors, etc.) increases the likelihood you will touch upon a learner’s existing knowledge or experience. Also, one easy tip for finding out a learner’s prior experience with a subject is to simply ask them: what are their experiences with it so far, if any? If none, what are their existing ideas, notions, concepts, etc. about it?

2. **Repeat yourself!** Repetition does breed neural connections.

3. **Arrange for what James Zull calls “firing together.”** If you want your learners to associate two or more concepts with one another, arrange for them to happen together.

4. **Focus on “errorless learning.”** If a learner is having a difficult time due to having incorrect knowledge currently, research suggests it is better to ignore what is wrong and focus on what is right. It likely only adds complexity to an existing network to tell a participant information they currently think is incorrect. So, don’t stress mistakes; this just reinforces neuronal networks that aren’t useful.

5. **Build on incomplete networks rather than correcting them.** Remember that nothing is new. If networks are incomplete, or even if learners have their facts wrong, be creative in your approach to building on incomplete or “wrong” facts. Work from wherever the learner is now rather than expecting them to understand the new knowledge with no context.

6. **Use metaphors, analogies, concrete examples, stories, parables, etc.** These types of tools allow learners to connect an abstract idea to something they can understand.

7. **Ask learners to create their own metaphors, analogies, examples, etc.** Asking learners to construct their own examples is a sure fire way to ensure they have learned the information.
Resources

