

What is Learning? Can We Learn Better Than Apes Do?-Part 1

by Alvaro Fernandez Copyright (c) 2007 Alvaro Fernandez We can all Learn-and transform our brain in the process. That's the message in this Interview-Part 1 (out of 2) from Dr. James Zull, Professor of Biology and Biochemistry at Case Western University, Director of UCITE (The University Center for Innovation in Teaching and Education), and Professor of a Human Learning and The Brain class. Dr. Zull loves to learn. And to teach. And to build connections. He has spent years building bridges between neurobiology and pedagogy, as a result of which he wrote *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning*, which shows how neurobiological research can inform and refine some of the best ideas in educational theory. In that book, Prof. Zull added biological information to David Kolb's Learning Cycle framework. David Kolb's *Experiential Learning: Experience as the Source of Learning and Development* book refers to human learning, but Professor Zull tells that today, in his desk, he has cognitive neuroscience papers and research that show that apes go through the same 4 stages when they are learning a new activity, activating exactly the same brain areas than we do. AF: What is Learning? Can apes really learn in the same way we do? JZ: Learning is physical. Learning means the modification, growth, and pruning of our neurons, connections-called synapses- and neuronal networks, through experience. And, yes, we have seen that apes go through the same Learning Cycle as we do, activating the same brain areas. AF: How does Learning happen? These are the 4 stages of the Learning Cycle. 1) We have a Concrete experience, 2) We develop Reflective Observation and Connections, 3) We generate Abstract hypothesis, 4) We then do Active testing of those hypotheses, and therefore have a new Concrete experience, and a new Learning Cycle ensues. In other words, we 1) get information (sensory cortex), 2) make meaning of that information (back integrative cortex), 3) create new ideas from these meanings (front integrative cortex) and 4) act on those ideas (motor cortex). From this I propose that there are four pillars of learning: gathering, analyzing, creating, and acting. This is how we learn. Now, learning this way requires effort and getting out of our comfort zones. A key condition for learning is self-driven motivation, a sense of ownership. To feel in control, to feel that one is making progress, is necessary for this Learning Cycle to self-perpetuate. Antonio Damasio made a strong point on the role of emotions in his great *Descartes' Error* book. AF: can we, as learners, motivate ourselves? How can we become better learners? JZ: Great question, because in fact that is a uniquely human ability, at least to the degree we can do so. We know that the Frontal Lobes, which are proportionally much larger in humans than in any other mammal, are key for emotional self-regulation. We can be proactive and identify the areas that motivate us, and build on those. In other words, the Art of the Learner may be the Art of Finding Connections between the new information and challenges and what we already know and care about. If I had to select one Mental Muscle that students should really exercise, and grow, during the schooling years, I'd say they need to build this Learning Muscle. Learning how to Learn. That might be even more valuable than learning what we stress in the curriculum, i.e., the subjects we teach. AF: Do you think this is happening today in our schools? JZ: I don't think so. First, of all, too many people still believe that Education means the process by which students passively absorb information. Even if many educators would like to ensure a more participatory and active approach, we still use the structures and priorities of another era. For example, we still pay too much attention to categorizing some kids as intelligent, some as not so, instead of focusing on how they could all learn more. Second, learning and changing are not that easy. They require effort, and also, by definition, getting out of our comfort zones. We need to try new things, and to fail. The Active Testing phase is a critical one, and sometimes our hypothesis will be right, and sometimes wrong. The fear of failing, the fear of looking un-smart, is a key obstacle to learning that I see too often, especially for people who want to protect perceived reputations to such an extent that they can't try new genuine Learning Cycles. AF: Fascinating. Given what you just said, how do you help your students become better learners? JZ: Despite the fact that every brain is different, let me simplify and say that I usually observe 2 types of students, with different obstacles to learning and therefore benefiting from different strategies. ... we continue this interview in Part 2

About the Author

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