BRAIN SCIENCE, EDUCATION AND OUR KIDS

TO BEST SERVE OUR KIDS IN SCHOOL, WE FIRST HAVE TO CHANGE OURSELVES

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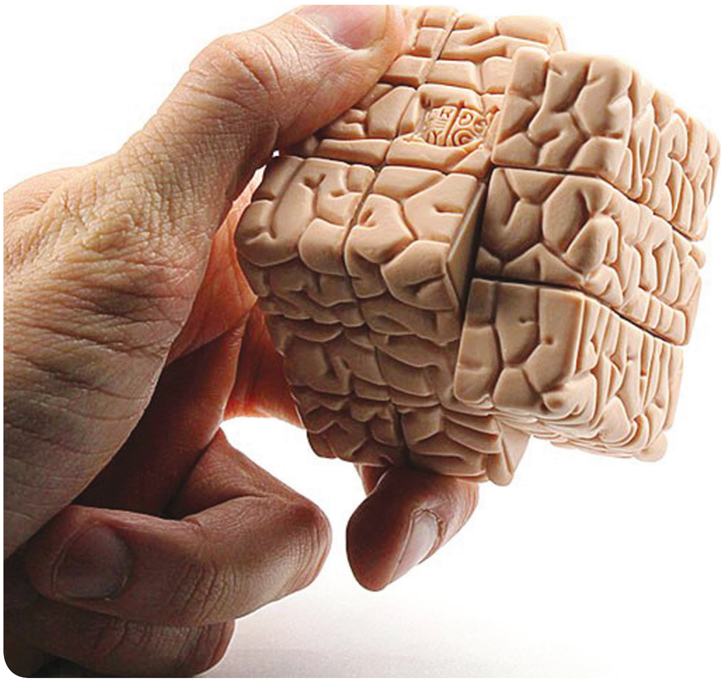
Neuroscience discovery is on the uptick. We are curious about the brain and what makes us tick.

Just browsing the internet, one sees books about our brains reading, thinking, remembering, aging, gambling, worrying, calculating, creating, and imagining. In the modern age of smart bathroom scales, lasik surgery, contact lenses, eyeglasses, and dentistry, it's possible to improve ourselves on the outside in very little time. But when it comes to our brain, we hear the old adages, 'practice makes perfect', and 'it takes 21 days to form a habit'. Sayings like these remind us that change occurs over time. Remember when learning your golf swing, playing music, speaking a new language, or driving a stick shift took up your whole mind? That time before any of those skills became effortless.

While the study of the brain is complex, neuroscience is just beginning to tackle the big questions like: How are of all of these feats achieved by one brain? What are the differences that help or block our ability to learn? Is it possible to improve our cognitive and creative insides? Why is this so hard to figure out? The answer is that in order to learn new skills for identifying, teaching and serving individual needs during learning, we have to first change our minds.

For starters, it is not just about practicing to develop a new skill or break an old habit, but also how we frame our understanding of some of these differences. Part of my research is helping to demonstrate why children on the autism spectrum experience sensory overload faster than other children their age. As it turns out, the back of the brain is trying to do the job of the whole brain. Instead of distributing functions across many parts of the brain, the back parts try to do it all. This results in the most unforgiving form of multi-tasking, piling one pile really high up instead of having several smaller more manageable ones. What if people understood that an autistic brain is simply a brain where one part is trying to do the job of the whole? Classrooms and social learning could be structured by anticipating and predicting where the 'high piles' are going to build up. Where are high piles likely to form? Homework (too much, too little time), performance anxiety (great math skills, but tests poorly under timed conditions), collaborative problem solving and group work (social rules are not explicit to these kinds of brains). Physical comfort (by their definition) has to come first for learning to seep in or pour out.



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A child's brain is an ever-changing puzzle

Some of the children I work with have dyslexia. They tend to be the kinds of kids who are, in spite of difficulties with spelling, reading, and writing, great navigators, speakers, performers and artists. I explain to them that their brain has a 'web' in it. That just above their left ear, sits a part of the brain that is usually divided into strands, like two strands of bread dough that will eventually be folded, twisted, or braided together. In their brain, though, those strands are kneaded together, like a duck's webbed foot, on a piece of tissue that is about the size of their pinky fingernail. The common reaction to this new information is often relief and even glee when a child realizes that this very large learning problem is because their brain has what one of them called a 'webbed toe'. Once they understand that dyslexia is a small alteration of tissue (and they can see how small the fingernail on their pinky is), it becomes fun and easy to teach them ways to compensate for their weaknesses and find new ways to perform their 3 R's (reading, writing, and 'rithmetic'). What was once a burdensome insurmountable challenge becomes attainable and engaging. Possible rather than perilous. They learn how to map their learning and ways to change that mapping into more traditional learning products often required at school. All of the sudden, they get 'two for the price of one' in their learning. They get to spend a bulk of their time incubating ideas, researching concepts, and mining for facts instead of getting stuck because formal language doesn't behave or line up in the order that it should. One more ounce or hour of practice won't change the fact that the two functions webbed together, language and spatial processing, play by different rules. Language forms in sequence (for instance, d-o-g means something different than g-o-d). Spatial information, such as puzzles, geometries, maps, and graphs, forms in multiple directions, and sometimes simultaneously. When you fuse those two types of function together, it creates crosstalk among different sets of neurons, disrupting how smoothly and efficiently kids like this learn in traditional settings. The 'playbook' for these kinds of brains involves teaching kids how to get to the same end, like succeeding on a test or a project required in school, by alternative routes. Instead of working against their weaknesses, we build on the momentum of their natural strengths.

Picture a group of riders in a peloton of the Tour de France, a rider following a leader lines up to the back of his wheel and 'drafts' the energy to keep pace with less effort and more efficiency, extending his physical and mental resources. In similar fashion, by taking a page from the bike racing playbook, we shift our understanding of autism and dyslexia to a more neutral view. Autism is a consequence of a 'jealous' brain, uncoordinated parts trying to do it all. Dyslexia is a brain with a small webbed toe. In this view, we change the process. We reserve our emotions for the engagement and effort to learn, to orienteer, and to discover what the pathways to learning really are. Drafting on the energy of this new understanding, we create alternative strategies that teach to these 'playbook' processes instead of trying to poke, prod, and untangle something that only looks like a knot and might just benefit other learners as well.