

# Teaching with the teen brain in mind

## 10 top tips

Over the past 15 years there has been a massive outpouring of research that explores the human brain. Many theories have been tossed out, other newer ones are now considered the norm and much debate has been had in the corridors of our universities as neuroscience touches every corner of academia.

As a former teacher it would have been really useful to have this fabulous research at my fingertips when I was in the classroom, and I am deeply grateful to Tim Burns, Norman Doidge, Daniel Siegel, Barry Cohen, Sheryl Feinstein, Eric Jensen and John Medina (just to name a few) who have expanded my knowledge of this fascinating organ.

The first key concept as educators to always keep in mind is neuroplasticity, which essentially means that the brain has the capacity to change all the way through life.

*“Brain pruning challenges the way that our young teen students see themselves, their parents and the world.”*

“The idea that the brain can change its own structure and function through thought and activity is I believe the most important alteration in our view of the brain since we first sketched out its basic anatomy and the working of its basic component, the neuron.” Norman Doidge, *The Brain that Changes Itself*.

Put simply, when one neuron connects to another neuron via a synapse, which occurs at the end of an axon, via dendrites, new learning occurs. Simple eh? Neuronal ‘highways’ can be strengthened through repeated and focused thought as well as repeated activities and the stronger they are, the better they function.

Almost everything a child does from birth onwards involves building connections between the neurons. As Daniel Siegel and Tina Payne Bryson write in their innovative book, *The Whole Brain Child*, “Findings from various areas in developmental psychology suggest that everything that happens to us — the music we hear, the people we love, the books we read, the kind of discipline we receive, the emotions we feel — profoundly affects the way our brain develops.”

The human brain continues to evolve from primitive times and the executive functioning part of the brain, also called the prefrontal cortex, is the last part of the brain to mature, often not until the mid 20s. In fact, there are many adults who still struggle to use their prefrontal cortex especially when they are exhausted, stressed, hungry or in pain — think of road rage, troll behaviour online and family violence. Knowing this can help many teachers and parents understand the confusion and angst that can happen during adolescence.

The journey of adolescence sees the human brain undergoing some amazing, ancient and biologically wired changes to enable a child’s brain to become an adult brain. While the same principles of ‘use it or lose it’ and anything we practice frequently equals improvement still apply, there are some unique challenges for teachers of adolescents, especially our teens, in the classroom.

The initial brain pruning that occurs in the first stage of adolescents — for girls roughly 18 months before boys — often creates very unexpected, confusing changes for our teens. Forgetfulness and a decline in organisational skills are clear signs that brain pruning is happening. Even our best students can forget major assessments, leave their backpack on the bus, walk to the wrong class, forget what day of the week it is and forget things that they previously found easy to remember. Being mindful of this in our classrooms and helping students with gentle reminders, visual reminders and reassuring them that this is a normal stage of brain development can really help our teen students not feel completely overwhelmed by these changes.

Brain pruning also challenges the way that our young teen students see themselves, their parents and the world. This is often the beginning of self-criticism, self-loathing and negative thinking patterns that can become permanent. This window is when many psychiatric disorders manifest themselves and teen depression is at a frightening level in our modern chaotic world.

Teens can struggle with moods, an ability to concentrate, and have difficulty managing distraction and frequent change, and this creates an overload of the stress hormone cortisol. Many of us who have experience teaching in secondary schools have seen irrational outbursts, uncharacteristic behaviour and been confused about what is going on behind those glum, grumpy faces. Research shows that the intensity of feelings and emotions in adolescence is heightened and they do feel things much more intensely than before adolescence or in adulthood.

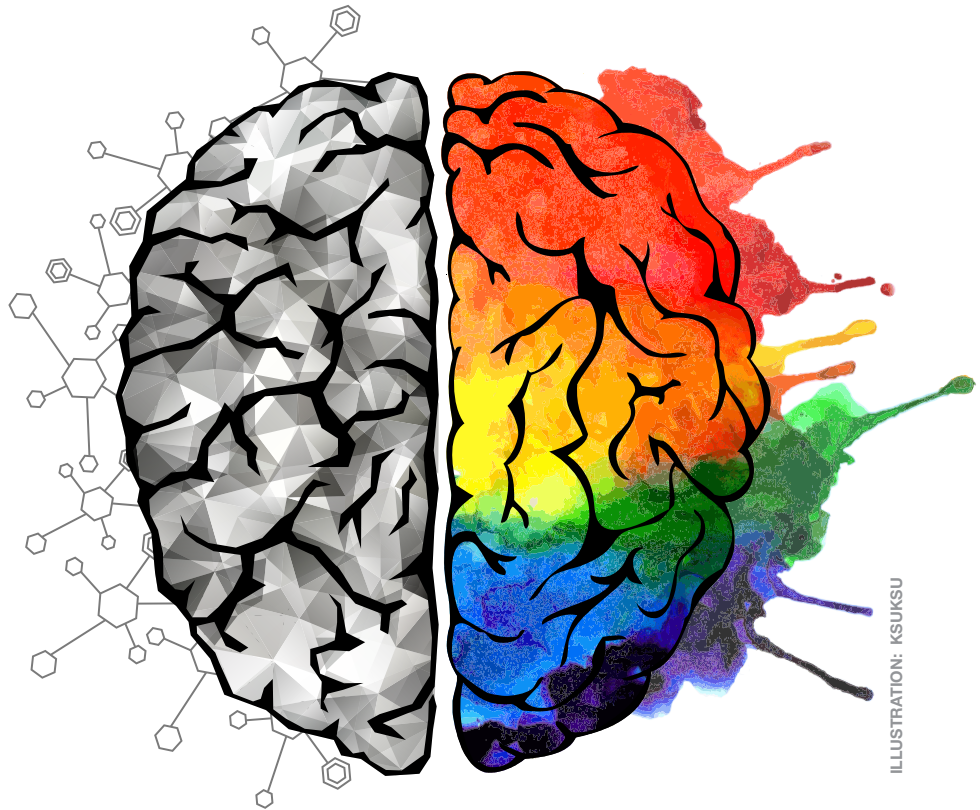
If that is not challenging enough, without an understanding of how the neurotransmitters in the human brain work we can unintentionally make things worse. An overload of cortisol plays havoc especially with teens who, without a prefrontal cortex, struggle to manage heightened stressful times. The classroom tantrum is similar to the toddler's shopping centre tantrum in that both can be viewed as an event of the brain, a massive cortisol discharge, so that the teen can return to a calmer state.

The feel-good brain chemicals of serotonin, dopamine and endorphins are very difficult for adolescents to be able to create on their own. The capacity to self-regulate one's emotions, moods and physical energy is another one of those invisible capacities that we can find hard to understand.

Humans are biologically wired to survive first, and to be smart and happy after that. If we always keep this in mind, this overriding invisible drive to survive, we can understand how important it is for teens to feel safe in our schools.


As John Medina writes in his book *Brain Rules for Baby*, "The brain is not interested in learning. The brain is interested in surviving. Every ability in our intellectual tool kit was engineered to escape extinction. If you want a well educated child, you must create an environment of safety".

Our teens are coping with hormonal changes, physical changes and brain changes while living in a more chaotic, crueller, faster paced world than we grew up in. Essentially, for our teens to perform well in our schools — emotionally, socially, cognitively and psychologically — they need to be surrounded by staff who understand the unique challenges happening within those amazing brains.



## 10 top tips for teaching with the brain in mind:

1. Happy calm teens will learn best.
2. Repeated activities consolidate strong neuronal pathways — however boredom does the reverse! Keep it interesting.
3. Always remember all teens struggle to maintain good brain chemicals.
4. Educate them about the importance of sleep — deep sleep creates spaces for new learning in the brain every day.
5. Encourage good quality food — it helps stabilise moods and improves concentration.
6. Water is the only liquid that hydrates the brain and removes fuzzy brains that can cause concentration problems.
7. Educate teens about what is happening in their brain and how it impacts their world.
8. Teach them how to help organise learning with brain friendly strategies.
9. Suggest teens take extra fish oil to improve brain integration.
10. Positive enthusiastic relationships with teens based on mutual trust and respect creates the best environment for teens to learn in.

Lastly, keep in mind how to keep your own brain in the best shape. Exercise, eating well, staying hydrated, getting enough sleep and yes this is also possibly why we have a secret lolly drawer – for a much-needed serotonin kick on a tough day at the coalface. 

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