

FROM THE DEAN OF BOYS' EDUCATION

EDUCATIONAL NEUROSCIENCE IMPLICATIONS FOR BOYS' EDUCATION

Jason Cheers | Dean of Boys' Education

The growing field of educational neuroscience presents many opportunities as well as challenges for educators. Through brain imaging technologies we now know that the brain changes constantly as a result of learning and remains 'plastic' throughout life. This involves creating and strengthening some neuronal connections and weakening or eliminating others. We are also finding out more and more about the unique ways boys' and girls' brains function. This is not to say that the brain development of all boys and all girls is identical, but new fMRI research continues to show that there are some consistent patterns.

There are many aspects associated with boys' neurological development that can impact significantly on their engagement with schooling. Some of the key aspects that are unique to boys can be summarised below:

- > The prefrontal cortex is responsible for cognitive processes. It is the last area of the brain to fully mature, with this process occurring later in boys.
- > The neurological architecture of areas associated with language and communication (Corpus Callosum, Broca's area and Wernicke's area) are significantly different in boys.
- > The hippocampus plays a key role in the formation and retrieval of long-term memory. The hippocampus is significantly smaller in males, as well as having a slower speed of neuron transmission.
- > Boys, above all of their other senses, tend to rely more on their visual cortex for gathering information.
- > Serotonin facilitates the neural pathways between the limbic system (emotion) with the frontal lobes (the brain's thinking centre). Levels of serotonin in boys' brains are substantially lower and decline temporarily during adolescence. Compounding this is a surge in testosterone around the age of ten which interplays with serotonin.
- > Movement can act as a neuro-stimulator and calming mechanism for boys.

Girls and boys have equal opportunities for achieving success in their schooling. However, through neuroscience we see how their pathways on the journey to success can differ.

For both boys and girls, it is also clear that the adolescent brain is far from mature, and undergoes extensive structural changes well past puberty. Adolescence remains an extremely important period in terms of emotional development partly due to a surge of hormones in the brain, combined with an under-developed pre-frontal cortex which is responsible for logical and moral reasoning. At this time many young people have well-developed cognitive capacity but are still developing their emotional maturity. This has been referred to as "high horsepower, poor steering."

At Trinity we are wholehearted in our belief in the benefits of an all-boys' education and thrive on the many unique opportunities we can offer our boys that are specific to their needs. A key message from educational neuroscience is the need for holistic approaches in education which recognise the close inter-dependence of physical and intellectual well-being, as well as the interplay of the emotional and cognitive, the analytical and the creative arts. Nurturing these elements through the breadth of opportunities and experiences we provide our boys is very important.

Effective boys' education is providing more than just a narrative. It's knowing that all boys are not the same, but still acknowledging that they are boys and have unique physical, social, emotional and learning needs that we continually strive to meet. We do need to be cautious about claims made in neuroscience and their implications for education, as it is a growing field. However, there are significant benefits in helping inform our practice as we continue to provide the very best learning environment for our boys to grow and develop into fine young men.

Note: This article acknowledges the research of Associate Professor Michael Nagel and the OECD Centre of Educational Research and Innovation.



Trinity Grammar School

SENIOR & MIDDLE SCHOOLS | 119 PROSPECT ROAD, SUMMER HILL NSW 2130
PHONE +61 2 9581-6000 | FAX: +61 2 9799-9449