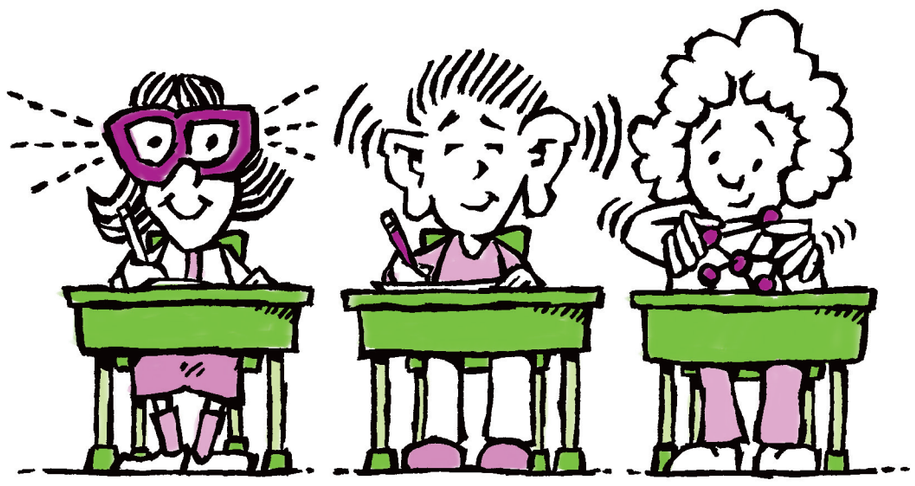
Shattering 3 Myths of Teaching and Learning

Neuromyths are common misconceptions about how the brain functions.[1]

NEUROMYTH 1

Students learn best when they receive information in their **preferred learning style** (e.g. visual, auditory or kinaesthetic).



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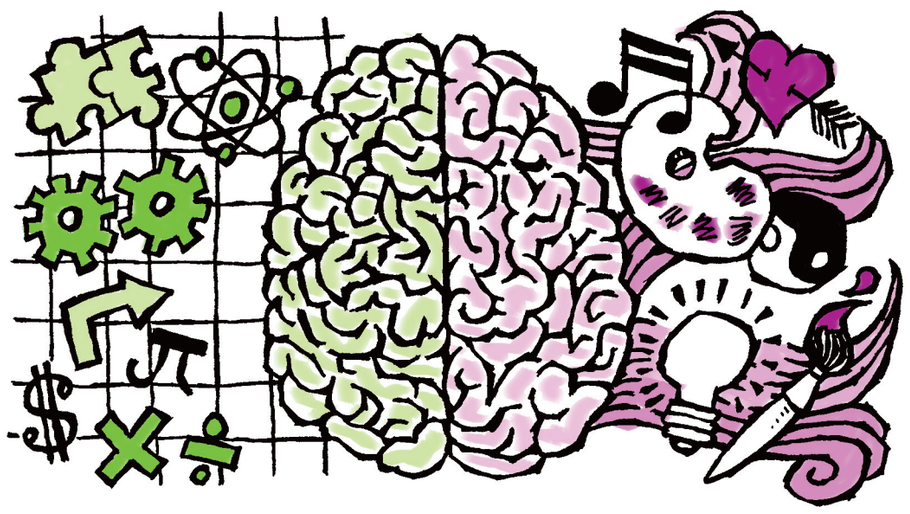
Adapting teaching methods to a student's learning style is not beneficial

We can classify students based on their preferred learning styles, but there's no evidence that adapting instruction to students' learning styles helps them to learn better.[2]

NEUROMYTH 2

Differences in **left brain/right brain dominance** can help to explain individual differences among learners.



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There are no two types of brains that would require different teaching approaches

Students can favour and excel in, for example, mathematics over the arts, but these preferences and strengths are not associated with brain dominance in the left or right hemisphere.[3]

NEUROMYTH 3

Short periods of **coordination exercises** can improve the integration of left/ right brain function.

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Coordination exercises show no effect on communications between left and right brain

Physical activity does greatly improve cognitive capacity [4] and function [5,6] but only after students increase their heart rates for 20-30 minutes of vigorous exercise.[7]

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The EdCan Network believes that the discovery of these and other neuromyths have the potential to **transform traditional models** of learning and teaching. We encourage educators to **learn more** about the profound change that neuroscience research could have on their practice.

To learn more about these neuromyths, please read "Neuromyths in Education – It's time to bust these widely held myths about the brain" by Dr. Steve Masson and Jérémie Sarrasin at: **www.edcan.ca/neuromyths**

NOTES

1 http://www.oecd.org/edu/ceri/neuromyths.htm

2 Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest, 9*(3), 105-119.

3 Alferink, L. A., & Farmer-Dougan, V. (2010). Brain-(not) based education: Dangers of misunderstanding and misapplication of neuroscience research. *Exceptionality, 18*(1), 42-52. doi: 10.1080/09362830903462573.

4 Spitzer, U. S. & Hollmann, N. W. (2013). Experimental observations of the effects of physical exercise on attention, academic and prosocial performance in school settings. *Trends in Neuroscience and Education, 2* (1), 1-6. doi: 10.1016/j.tine.2013.03.002.

5 Chaddock-Heyman L., Erickson, K. I., Voss, M.W., Knecht, A.M., Pontifex, M.B., Castelli, D.M. & Kramer, A.F. (2013). The effects of physical activity on functional MRI activation associated with cognitive control in children: a randomized controlled intervention. *Frontiers in Human Neuroscience, 7*, 72. doi: 10.3389/ fnhum.2013.00072.

6 Herting, M.M. & Nagel, B.J. (2012). Differences in brain activity during a verbal associative memory encoding task in high- and low-fit adolescents. *Journal of Cognitive Neuroscience, 25* (4), 595-612. doi: 10.1162/jocn_a_00344.

7 Dekker, S., Lee, N. C., Howard-Jones, P., & Jolles, J. (2012). Neuromyths in education: Prevalence and predictors of misconceptions among teachers. *Frontiers in Psychology, 3*, 429. doi: 10.3389/fpsyg.2012.00429.

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