



Change your mind

CATHERINE SCOTT REPORTS ON RESEARCH THAT SHOWS PEOPLE FROM ANY ABILITY RANGE OR AGE GROUP CAN INCREASE THEIR CAPACITY TO LEARN.

When people are asked about intelligence they tend to think about it in two different ways. One group of people sees intelligence as a fixed amount, present at birth. That fixed entity determines learning but is not determined by it. In other words, what you are born with decides how much you'll achieve and the experiences you have along the way won't influence or increase your mental capacity.

Another group of people, however, sees intelligence not as a fixed thing but as a process, one that is influenced by experience and by learning. The best research evidence is starting to suggest that this latter view is the more accurate. As an example on the level of the individual child, some work with children with autism spectrum disorder supports the view that brains can be 'grown' or at least their functioning improved by the right sorts of learning experiences.

The phenomenon known as the Flynn effect is a further example at the level of whole populations. The Flynn effect describes the trend that saw IQ scores rise steadily throughout the 20th century – in some places it continues to do so. Genes haven't changed much or at all in that time, so plainly it's something in the environment that is increasing people's mental capacity as measured by intelligence tests.

Another taken-for-granted belief in our culture is that cognitive decline with age is inevitable. Some make the distinction between what is known as crystallised intelligence – what we know – and fluid intelligence – how well we learn new things – and maintain that while crystallised intelligence may increase with age, our ability to learn new things invariably gets worse.

The good news is that research evidence suggests that everyone, from any ability range or age group, can improve levels of cognitive ability, that is, increase their *capacity* to learn, not just how much they learn. The key is the link between intelligence and what is known as working memory.

Put simply, working memory is the cognitive work space of the mind: the larger it is the more information can be held

in it and made available for tasks, like problem solving. The link with intelligence is obvious, as better cognitive capacity allows for more 'intelligent' performance.

The research evidence suggests that working memory and cognitive capacity can be increased at any age and for any ability range.

There are five keys to improving the mind's capacity.



Seek novelty

Seek out new experiences, ways of thinking, ideas and activities, or offer these to your students. Encourage debate and discussion, comparing perspectives and opinions. Don't only hang out with people who agree with you! Novelty has observable effects in the brain: it increases the brain's plasticity or capacity for learning and also increases levels of dopamine, the motivation chemical. More dopamine means more eagerness to learn.



Challenge yourself and your students

Lots has been written about brain training and the importance of taking up challenging new activities but the truth is that each challenge only works as a brain trainer for a short period. The challenges have to keep coming.



Think creatively

We've been encouraged to think that creativity is a property of the 'right brain,' but truly creative thinking involves using both sides of the brain to generate novel and appropriate solutions to problems by combining information and ideas from widely different domains.



Do things the hard way

Many labour-saving devices de-skill us. It's better for your brain – and your stu-

dents' – to ditch the labour saving devices and instead use the onboard computer, the mind. Do some maths without calculators, remember phone numbers instead of storing them in your phone, navigate without the assistance of your global positioning system.



Network

Here's one tip that will seem easy to the linked-up generation. Taking the time to expose yourself to new people, ideas and environments is great for mental growth. Talking to other people from a wide range of backgrounds gives you a great opportunity to see things from different perspectives and to obtain the information you need to make interesting hunches into realities.

It's pretty obvious that these five keys are not entirely separate: seeking new experiences can also involve taking on challenges and linking up with new groups of people.

Incorporating these strategies in our own lives increases our capacity to learn and finding ways to include them in our teaching assists our students to do the same. For teachers looking for ways to increase the creativity of their teaching, and thus their students', Robert Sternberg's Rainbow Project is a great place to start. ■

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FURTHER READING

Jaeggi, S.M., Buschkuhl, M., Jonides, J. & Perring, W.J. (2008). *Improving fluid intelligence with training on working memory. Proceedings of the National Academy of Sciences.* 105(May): 6829-33.

Sternberg, R.J. (2002). *Raising the achievement of all students: Teaching for successful intelligence. Educational Psychology Review.* 14 (4): 383-93.