

## THE CONVERSATION

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# 'Brain-Training' ... or learning, as we like to call it

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The evidence to support brain-training programs is too thin to be trialling them in our school system.

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The Catholic Education Office in Sydney has announced that from 2013 it will trial the controversial Arrowsmith Program for children with learning difficulties.

Arrowsmith is one of a number of “brain-training” programs currently on the market. Along with others such as Brain Gym and the DORE program, they claim to stimulate or re-organise a child’s brain to make it better, faster, and more efficient, helping to alleviate the symptoms of any specific learning difficulty.

On the surface, these programs sound beneficial. Isn’t the brain just another muscle that benefits from being “in training”?

Perhaps not.

It’s time to take a closer look at their claims and examine whether this type of program should really be trialed in schools.

### Brain-training jargon

The first point to note is that the term “brain-training” is a tautology. All learning happens in the brain. And so any intervention that is given to a child, will, in some way then, “train their brain”.

So the question is not should we train children's brains, but *how* should we train their brains? Or in old-fashioned terms, what should we "teach" children and how should we help them "learn", particularly when there are learning difficulties at play?

The concepts that underlie many of these brain training programs sound intuitively right – like the idea that the brain needs to be exercised in order to function optimally.

According to Arrowsmith, the program can be "thought of as a type of mental work out for the brain" in which "underfunctioning areas are treated like weak muscles and are intensely stimulated through cognitive exercises".

This is rather an odd idea given that the brain is "working out" all the time – constantly receiving, analysing and responding to masses of stimuli. Reading the paper, walking down the street, chatting to a friend - all of these involve an enormous number of complex neural processes. The brain is hardly sitting on the couch, watching TV and eating chips.

The idea that the brain needs a mental workout doesn't hold much water when we know the brain is working out pretty hard every waking (and even sleeping) moment.

## **Plastic brains**

A concept underlying many brain-training programs, including Arrowsmith's, is that of "neuroplasticity". This idea stems from research in neuroscience that shows that parts of the brain designed for one function can adapt to perform new ones. Brains adapt depending on how they are stimulated.

But if neuroplasticity tells us that the brain can adapt, it does not tell us how the brain should be stimulated (or trained). Thus, neuroplasticity does not tell us about how to treat learning difficulties.

Despite this, programs that claim to be based on neuroplasticity have strong opinions about how this should be done.

Arrowsmith states that it "identifies, intervenes and strengthens the weak cognitive capacities that affect learning.

Students are able to capitalise on their increased learning capacities and after a three or four year program can function without special education assistance or program accommodations". They claim that this "has proven effective for students having difficulty with reading, writing and mathematics, comprehension, logical reasoning, problem solving, visual and auditory memory, non-verbal learning, attention, processing speed and dyslexia".

## **'Brain training' in formal education?**

The main issue for the Catholic Education Office in Sydney, and indeed any schools system considering these kinds of programs is the issue of evidence.

At the moment, the effect of the Arrowsmith program on skills such as reading and writing has not been tested in a randomised control trial, and so there is no direct evidence for their claims.

We know that children with reading difficulties make the largest gains in programs that target training directly on literacy skills. Programs that attempt to improve literacy by targeting skills that are presumed to underpin reading, such as auditory processing or **kinesthesia**, are known to be less effective.

Similarly, programs that aim to improve multiple skills at the same time – reading, maths, attention, memory, problem solving – tend to be less effective than programs that focus just on trying to improve reading.

If there was evidence supporting the claims of programs like Arrowsmith, or indeed any “brain training” programs, then the landscape would be very different.

But in the absence of such evidence, teachers and parents should concentrate on the methods that are proven to assist children with learning difficulties.

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