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Metacognition & The Science of Learning

The DNA of schools consists of two intertwined strands- learning & wellbeing. To learn effectively we need to feel well & we can all learn how to improve our wellbeing.

Inscribed on the Temple of Apollo in Delphi is the maxim **γνώθι σαυτόν** or **'Know Thyself'**, the basis of metacognition. Self-knowledge enables us to become better learners & how to look after ourselves & improve the lives of others.

The power of self-knowledge is actualised when we know that what we do makes a difference. This is known as self-efficacy & was originated by the psychologist Albert Bandura. Our assessment of our ability to do something & our willingness to act on this (self-efficacy) directly predicts our success in that area. Self-efficacy improves results in school & is a major factor in success in all aspects of life.

Henry Ford summarised this succinctly with, **'Whether you think you can or you think can't, you're right.'**

Metacognition creates success.

Metacognition involves knowing how our brain learns & thinks best. Knowing this helps us to leverage our own strengths. This sets everyone up for success in life.

To create this, we need to involve our students in investigating & experimenting how their brain works & how to learn best.

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The Education Endowment Foundation (2018) stated that metacognition was one of the most effective ways of supporting learner progress.

Once we understand how we learn & how our brain works, everything changes—from the questions we ask, to the way we absorb, process, & retrieve information.

Success in life is largely a matter of knowing what we are good at & finding places or people who value what we have to offer.

Creating A Road Map for Success

One of the great gifts parents & teachers give young people is highlighting their own personal roadmap for success. This is a gift that children will spend the rest of their lives unwrapping.

Our brains are always developing & growing. Brains are alive & become increasingly intricate & connected as we challenge ourselves with new ideas & situations. This is neuroplasticity.

As we adapt to different situations in life, we all get smarter. Understanding how we are smart & how to use awareness this to get even smarter accelerates our journey towards success.

What smart people do

When we look at what successful people do, a clear pattern emerges. They don't try to be good at everything. They spend time working out what they are good at & then expand from

& amplify that. This relies on-you guessed it- metacognition.

Really high achieving students are more likely understand how their brains learn, how they think & how to use this knowledge to create success.

How we can help young people to do what smart people do.

An obstacle is that none of us know what we don't know (*until we know it*). Helping our young people discover what they are good at & how to use it, is about knowing & applying learning strengths. This is not the knowledge that most of them have.

Young people are often much smarter than they think they are. Ask them to complete (*with parents if you wish*) an analysis of learning strengths at www.mylearningstrengths.com

Start with what to strong rather than what is 'wrong'. Use these results to plan a strategy for building upon learning strengths.

Use this to acknowledge their smarts when you can. For example, '*Robin, I know you have learning strengths in spatial reasoning, what are your thoughts about..?*'

Ideally, repeat an assessment of learning strength every 6 months. Consider obtaining the full report.

If we don't start somewhere, we often don't start at all.

Our awareness of how we think, & our learning strengths often begins when someone else points out our own capacities to us. This is where parents & teachers powerfully kickstart success for young people.

Part of beginning is knowing where to begin. If we start from where we are already strong, we are most likely to have some early success & gain in momentum & motivation. This in turn builds our capacities & our self-efficacy.

Most of us are not good at everything but we are good at some things.

Finding out our learning strengths points us towards what we can leverage towards success. It will often also indicate our default mode- the way we most often & most easily think.

Spatial Reasoning

People with learning strengths in spatial reasoning often find it easiest to solve problems by connecting ideas & recalling information using pictures & symbols.

Perceptual- Motor Skills

People with learning strengths in perceptual-motor skills primarily use their senses & their bodies to learn. Skilled dancers, gymnasts, athletes, artists, & musicians often have learning strengths in this area.

Concentration and memory

People with learning strengths in concentration & memory are often successful students. Their focus & memorization of information is a great advantage, but some may need to learn to use their strengths to deepen their understanding.

Planning and sequencing

People with learning strengths in planning can order information into learnable chunks. Their memory is often like a chain of ideas that are linked in order.

Their memory is usually quite good- retrieve one idea & a series of others tumble out. However, they may follow the same patterns over & over again & may need help to develop multiple ways of solving problems.

Thinking and logic

Analytical thinking, weighing up options & the advantages & disadvantages of a particular strategy are powerful ways of thinking when you have this learning strength.

People smarts.

People with learning smarts usually have high levels of emotional intelligence & also are greatly interested in others, what they think & what they do.

While their interest in other people can act as a distraction, linking new ideas with specific people often increases their interest & motivation.

Language and Word smarts

This learning strength involves the ability to reason, solve problems & recall information using verbal methods such as printed & spoken words. They often have exceptional communication skills.

Number smarts.

People with a learning strength in number smarts are often clear & logical thinkers who can sequence numerical tasks well. This strongly overlaps with spatial reasoning.

For some, we need to help them to shift from the abstract to the practical. Seeing the applications of numbers to real world problems is a good starting point.

How can figure things out when we are stuck

When we find something difficult to understand (& *we all do at times*) we need to think again. This means being aware that our usual way of thinking about an idea or issue is usually not the only way.

Many students when they get stuck, stop, & await further instructions. This does not set them up for success in life. Instead of stopping, ask -

How am I thinking about this?

Are there different ways I could think about this?

What would happen if I created:

- a map (*spatial reasoning*)
- a physical movement (*perceptual- motor*)
- mnemonic (*concentration and memory*)
- a list or outline of main steps (*planning*)

- a detailed argument (*thinking and logic*)
- a link with someone I know (*people smarts*)
- a story (*language and words*)
- a formula or algorithm (*number smarts*)?

Sometimes it pays off to broaden our ways of outlining & thinking about issues. Learning to shift from thinking in words (*language and word smarts*) or schedules & timelines (*planning and sequencing*) to thinking in numbers (*number smarts*) will often create insights & perspectives we weren't initially aware of.

None of Us Is as Smart as All of Us

Metacognition allows us to know the ways in which we think. This involves learning about our brains.

Knowing that other people have different learning strengths & therefore can make different contributions increases the flexibility of problem solving.

I am grateful to Liz Keable & recommend her posts on metacognition on Linked-In to you for further inspirational reading.

More information

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Andrew's websites

www.andrewfuller.com.au

www.mylearningstrengths.com has helped over 100,000 young people discover & build on their learning strengths.

Books for Parents

Tricky Behaviours

The A to Z of Feelings

Unlocking Your Child's Genius

Books for Teachers

Guerilla Tactics for Teachers (from

www.andrewfuller.com.au)

Tricky Behaviours

Tricky Teens (

Unlocking Your Child's Genius

Neurodevelopmental Differentiation- Optimising Brain Systems to Maximise Learning