



The past 30 years has seen huge advances in cognitive psychology and the brain sciences. Remarkable researchⁱ has overturned the picture of the brain as being hardwired at birth and shown that it is remarkably plastic, capable of growth and change throughout life.

These findings dovetail beautifully with researchⁱⁱ that clearly shows excellence is the end result of a long process of learning and deliberate practice, and not the result of innate, hardwired, gifts. Practice and effort cause the brain to rewire itself, which we recognise as improvement and learning.

These insights have powerful implications for educators. It is now clear that intelligent behaviour is not an inborn fixed trait, but rather a highly dynamic, diffuse and ongoing processⁱⁱⁱ- a process that is imminently teachable and the result of the rewiring of our plastic brain to perform more intelligently.

The challenge for educators is how to take this research and translate it into classroom practice that actually teaches students how to behave more intelligently and become more successful. What do you teach? How do

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you teach it? In short, what is the pedagogy of the thoughtful teacher?

Based on the ground breaking research briefly described above, the practical pedagogy of the Thoughtful Teacher is informed by a two further related ideas: Mindset and Habits of Mind.

Mindsets, developed by Stanford psychologist Carol Dweck describe the beliefs a person holds about their own abilities. A Growth Mindset^{iv} reflects the belief that a person's most basic abilities can be developed through dedication and hard work

One of the jobs of the Thoughtful Teacher is to ensure students develop a growth Mindset. This simple but powerful idea, has a profound effect on student motivation and performance. In the following pages we will explore how simple, easily adopted strategies can lead to the development of a Growth Mindset and why this is a key to student success.

Another job of the Thoughtful Teacher is to teach students to behave intelligently – to develop powerful Habits of Mind. Described by Art Costa and Bena Kallick the Habits of Mind^v are defined as the dispositions that are skilfully and mindfully employed by characteristically successful people when confronted with problems the solutions to which are not immediately apparent. As we shall see several of these Habits of Mind are very closely related to the Growth Mindset. Developing more mature, more effective Habits of Mind is a second key to ensuring greater student success.

About Success and Intelligence

A goal, perhaps *the* goal, of the Thoughtful Teacher is to help students behave more intelligently. The inference being that if students are capable of behaving more intelligently they are more likely to be successful.

The word “success” brings with it many connotations and meanings. In the context of the teaching students to be more successful we will define success as achieving a goal that requires effort. And we are going to define intelligent behaviour as behaviour that makes it possible to reach your goal.

Fixed and Growth Mindsets

Carol Dweck defines two types of Mindsets: Fixed and Growth. In the fixed mindset you believe qualities like intelligence and talent are fixed quantities that you're born with, and there's nothing much you can do to change them. The fixed mindset brings with it a host of negative flow-on effects to learning that we explore below.



On the other hand a growth mindset, which we often see associated with successful people, encompasses the

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belief that you can learn to be more intelligent, improve your abilities, and develop talents.

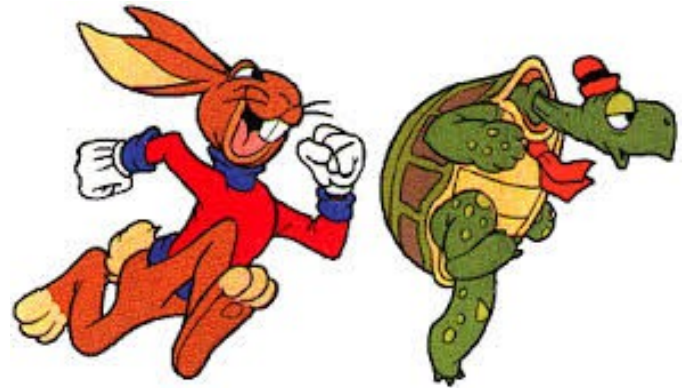
So how do students develop a growth or fixed mindset? The short answer is they learn it. Students pick up messages from the language we use, what we choose to teach, the behaviours we reward, and even the classroom (or home) environment we establish that teaches them to believe in a fixed or growth mindset.



The Thoughtful Teacher is aware of the way their actions reinforce a fixed or growth mindset and teach for the development of a growth mindset.

The Effort V's Ability Fallacy

In her book "Mindset" Carol Dweck shows how the story of the tortoise and the hare sends an unintended message that teaches a fixed mindset and also gives effort a bad name.



The story is suppose to espouse the importance of effort, but it actually sends the message that there are those with unique endowments (the hares ability to run fast) and those without (the tortoise who is slow). After reading the story, who has ever thought they wanted to be the tortoise? Most people want to be a slightly less foolish hare – to be able to have success without effort

The message we get from the story is that you only have to work hard if you haven't "got it". This is typical of a fixed mindset. For someone with a fixed mindset a genius is someone who has success without effort based on natural ability.

And it is not just children's stories that send this message. The media do it every day. As an example, in the movie "Good Will Hunting" there is a telling scene where Will Hunting (played by Mat Damon) is trying to explain his "gift" for mathematics. He describes it by comparing his ability to Mozart and Beethoven "when they saw a piano it just made sense to them they could just play. ... when it came to stuff like [mathematics] I could always just play. That's the best I can explain it". This view or genius is simply wrong and perpetuates the fixed mindset.

There are countless messages like this in a child's every day experience. These messages can lead to the

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development of a fixed mindset and belief in what we call The Greatness Gap.

The Greatness Gap

If you believe abilities, talents, intelligence and qualities like these are inborn and fixed, then you are likely to see successful people as inherently different from you. You couldn't be like them because they have something you don't. You perceive an uncrossable chasm between you and them. And why would you try to be like them if you know you don't have "it"? Effort is futile in this situation.

Fortunately studies of the acquisition of excellence^{vi} and high achievers in many fields have shown that success is in fact not the result of gifts or inborn talents. People who have achieved great things do not describe their abilities the way Will Hunting described them. They describe their talents as hard won - the result of years of hard work. In fact Mozart himself attributed his abilities to devoting more time and effort to composition than anyone else, not an inborn ability that came easily.

Talent is not what puts you on the other side of the chasm; it's what you've earned while crossing it.

Deliberate Practice and the Goldilocks Zone

High achievers aren't born - they are made. They have a belief in their own ability to improve (a Growth Mindset) and go about working in a way that achieves that improvement. Unlike people with a Fixed Mindset who see effort as a bad thing, high achievers see effort as a way to grow.

In order to build their abilities successful people put effort into things they can't currently do – rather than rehearsing the things they can. They work in that sweet spot on the edge of their competence that we call the Goldilocks Zone. This sort of practice is sometimes referred to as deliberate or purposeful practice^{vii}.

People with a fixed mindset fear the Goldilocks zone. It is a place that could show up the limits of their ability. It requires risk taking and the prospect of failure. But it's only through working in the Goldilocks zone, on the things we can't currently do, that we can hope to grow.

Crossing the Greatness Gap - Habits of Mind

Of course lots of people try to cross the greatness gap, but not all of them succeed. Literally millions of biographies of high achievers, and self-help books claim to show you the way across the greatness gap. However for most people the gap remains a reality because although you can see the truth of the effort these high achievers have put in to reach their goals, most people can't emulate it.

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The problem with having a growth mindset is that the belief on its own, while essential, is not enough. You must also have the capacity – the Habits of Mind - to improve your abilities.

When Art Costa identified the Habits of Mind he recognised them as the way successful people behaved when working in the Goldilocks zone. They not only persist, they are effective and skilled at persisting. They are not only risk takers, but they have developed their ability to take risks to a high level.

The Thoughtful Teacher understands how important it is not only to develop a growth mindset in their students, but also to develop powerful Habits of Mind that enable the growth to take place. Each new challenge that is faced requires more and more highly developed Habits of Mind in order for the student succeed.

The Process of Success

Understanding this process of success is an essential component of developing a growth mindset and in turn helping students to behave in a way that allows them to succeed at ever increasing challenges.

[Mindset] + [Deliberate Practice] + [Mature Habits of Mind] \diamond [Success]

Pedagogy for the Thought-ful Teacher

The importance of teaching in a way that helps students develop a growth mindset and effective Habits of Mind is clear. The challenge is how to translate these ideas into the day-to-day practice of the “Thoughtful Teacher” .

Fortunately nurturing a growth mindset and developing mature Habits of Mind in students does not require teachers to do *extra* work. The pedagogy of the Thoughtful Teacher is based on the focus they take during normal classroom practices. This focus, once understood and practiced, is remarkably easy to adopt and represents a change, not an extra, for day-to-day teacher practice.

The Learning Focus

In the Thoughtful Teacher’s classroom the learning focus is about *both* the content *and* process of learning. The process of learning is identified as a learning outcome and planned for accordingly. As part of the normal classroom routine students learn about learning.

Why focus on the process of learning? In the Growth Mindset it is the process of improvement that is important. Success comes from developing your abilities, not “having” those abilities.

The content, subject or topic is in many ways the vehicle being used to learn about learning. Reaching content

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outcomes is evidence that the learning process is being mastered.

Habits of Mind

The focus on the learning process, and the skills and attitudes needed to successfully engage in learning naturally brings our focus to the Habits of Mind. In the Thoughtful Teachers' classroom students are not simply "required" to engage in the Habits of Mind, they are actively taught how to engage in them in increasingly more mature and sophisticated ways^{viii}.

Habits of Mind represent the dispositions that bring about success in learning situations. While all of the Habits of Mind are important several are closely related to the development of a Growth Mindset and deserve special attention here.

In many ways the Growth Mindset is the complement of Striving For Accuracy. The Growth Mindset represents the belief that you can improve your most basic characteristics. Striving For Accuracy is the ability to do so effectively. Among other things, the Thoughtful Teacher helps students develop strategies for self correcting, they engage in pedagogy that encourages students not to settle for "good enough" and helps students recognise the hallmarks of quality work.

Working in the Goldilocks zone, by definition, confronts you with challenges that are not easily or immediately overcome. These sorts of challenges require persistence. While a Growth Mindset can encourage you to persist – to value it as a way of improving your abilities - in the Thoughtful Teachers' classroom students are also taught

how to persist effectively, and as we'll see below Persistence is actively and rewarded.

The ability to take risks is another key characteristic of the growth mindset. Students with a fixed mindset avoid risk-taking situations. To the fixed mindset student a new challenge is something that brings about the risk of failure – a failure that will show them as not being smart enough or talented enough. The Thoughtful teacher not only establishes an environment where risk taking is encouraged and rewarded (see below), they also teach students about how to take risks by recognising and minimizing negative consequences, planning for what to do if plans don't work out and other strategies.

Assessment Focus

In the Thoughtful Teachers classroom the focus of assessment is firmly on guiding learning, not evaluating standards.

About Standards

High stakes standardized testing is a reality of most educational systems today. Unfortunately when standards are used to label students they can lead to the development of a fixed mindset – the belief that some students have what it takes, while others don't.

A "standard" simply represents a point on a continuum. It is NOT a judgement of ability or potential. A useful mental exercise for the Thoughtful Teacher is to remind themselves that none of their students are "at standard" – when "the" standard" is expert level performance. For the Thoughtful Teacher a students' standard simply represents a point to work from, that is neither good nor

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bad, in a continuum of development. [side bar about Steaming].

Improvement and Process of Learning

Assessment for the Thoughtful Teacher focuses on improvement and the learning process. A student's current abilities are seen only as stepping-stones towards further development and not as a reflection of ability or potential.

In line with this focus both the learning process and a student's degree of improvement are common elements in assessment structures. For example assessment rubrics may be constructed that recognise the degree to which students have engaged in learning processes such as drafting or editing. Likewise improvement scoring – which measures the degree of improvement in a student's work instead of their standard – is common.

Feedback that accompanies assessment is focused on the learning process. It is constructive and formative rather than summative. Assessment is used to establish future learning goals rather than label or define standards.

Reward Structures

Learning and effort, rather than what might be traditionally thought of as achievement (of standards), are the focus of the reward and recognition structures in the Thoughtful Teacher's classroom. It is not necessarily the child who has achieved the highest standard that is

recognised and rewarded, but rather the child who is learning most effectively and improving the most.

In the Thoughtful Teachers classroom it is impossible for the "lazy A" student to get recognition and rewards. Reward is based on effort. The worst thing a student can do in a Thoughtful Teachers classroom is not try.

A typical award in the Thoughtful Teachers classroom might be for "Great Learning" and be given to the student who has improved the most or demonstrated effective learning strategies – rather than necessarily the student with the highest grade. (note that this student might also get the highest grades, but not necessarily)

In the Thoughtful Teachers classroom the success of one student is not at the expense of any other student. In most assessment situations there is no ranking or bell curves. Instead, assessment recognises behaviours or degrees of improvement that all students are expected and able to demonstrate. Students are shown that everyone can succeed – even if they are at apparently different standards – and students are encouraged to celebrate the success of others.

If there is any ranking of students it is usually based on improvement rather than standards.

Classroom Environment

In the Thoughtful Teachers classroom students are encouraged to take risks with their learning. Not only are students taught risk taking strategies as mentioned above, the teacher also establishes an environment where risk taking is possible.

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Students cite many potential negative consequences to risk taking in the classroom. Peers might label them as “dumb”. A risk might result in poorer grades or simply less recognition and/or praise. In the Thoughtful Teachers classroom the teacher works to identify then minimize these potential negative consequence and builds positive rewards for risk taking behaviours.

It would be common in the Thoughtful Teachers classroom to hear statements like “who made a great mistake today and what did you learn from it?” Or “who was stuck and can tell us how they got themselves unstuck in that last task?”. “No Put Down Zones” are also a useful way to demonstrate that risk taking is free of negative consequences.

By establishing a classroom environment where there are low, or no, consequences for risks, or in fact that risks are rewarded, students may develop a growth mindset.

Teacher Talk

Teachers spend a lot of time talking. They give instructions, ask questions, deliver content, give feedback or praise and engage in everyday conversation with students. The Thoughtful Teacher understands that every word and phrase they utter can carry with it a host of often-unintended messages

In Dwecks work on mindsets she cites the importance of the correct use of praise in establishing growth mindsets. Praise that suggests achievement is the result of what you are, rather than what you did, leads to the development of fixed mindsets.

For example, praise like “you’re so smart” instead of “you’ve worked so hard” has been shown to lead to a fixed mindset and decreases in student performance.^{ix}

Questioning is another place where well-chosen words can encourage risk taking and help develop a growth mindset. Art Costa has developed a questioning approach he refers to as “Powerful Questions”. These questions help elicit student thoughtfulness and encourage the development of a growth mindset.

Among the characteristics of powerful questions is the inclusion of a tentative statement such as “might”, or “could be”. This sort of language encourages the exploration of an answer. Tentative language takes away the “right or wrong” element of the question and encourages risk taking. Instead, a tentative question asks students to venture an answer without the risk of being wrong.

Brainology^x

Yet another characteristic of the Thoughtful Teachers classroom is that they may teach how the brain functions. In Dwecks work she has found that when students that are taught how the brain functions and responds to learning by growing new connections students develop a stronger growth mindset.



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Dweck has developed a “Brainology” course for students. Brainology is a blended online course for students to teach them about brain function, growth mindsets and effective study techniques based on brain function. The course has a range of teacher resources for complementary classroom activities.

Conclusion

For many years brain physiology, cognitive psychology and the real world of every day classrooms were miles apart, or connected in only the most tenuous of ways. Now, the Thoughtful Teacher truly delivers better learning outcomes for students by leveraging, in particular, the ideas of Mindset and Habits of Mind.

Even better, the Thoughtful Teacher is not a new breed of teacher. The strategies and pedagogy of the Thoughtful Teacher are easily adopted, requiring only a refocus of traditional teaching – not a whole new tool kit or extra work.

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Notes

- i The field of Brain Plasticity is rich and diverse. Educators interested in this field will find many books on the topic. The work V. S. Ramachandran such as [The Tell-Tale Brain: A Neuroscientist's Quest for What Makes Us Human](#) is highly recommended for people interested in learning more. Also "The Brain that Changes itself" by Norman Doidge is also an excellent read.
- ii Research in the field of Acquisition of Excellence has been led by Anders Ericsson. His book "The Road to Excellence" is a highly academic review of the field.
Many books have been written for the general public as an introduction to this fascinating work. Suggested reading includes:
Talent is Overrated by Geoff Colvin
The Talent Code by Daniel Coyle
The Genius in All of Us by David Shenk
Bounce by Mathew Syed
- iii Robert Sternberg
- iv Carol Dweck's book, Mindset is highly recommended reading
- v Learning and Leading with Habits of Mind is the foundational text for educators interested in Habits of Mind
- vi See note ii above
- vii Purposeful Practice and the 10 000 hour rule were popularized by Geoff Colvin in the Talent is over rated.
- viii For a description of how Habits of Mind are developed over time see Succeeding with Habits of Mind by James Anderson
- ix See Mindset by Carol Dweck
- x See <http://www.mindsetworks.com> for more information on Brainology