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Feel Good, Think Smart: *the role of emotion in learning*

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You may be wondering about the term 'human givens' so let me explain. Several years ago researchers in the UK decided that many ideas in psychology failed to explain the rise in emotional disorders, so they decided it was necessary to 'get back to basics'. In their challenge to build a new model of emotional health, they explored the recent developments in fields other than psychology and included only that which could be regarded as a bedrock truth, or a 'given'. One given, for example is that every living thing interacts with its environment to stay alive (Griffin & Tyrrell 2003). This applies to plants, birds, fish, and of course humans. With humans however, they have more in mind than just staying alive. They need to have positive connection with other humans, to feel validated, to have a sense of meaning, significance and be challenged with purposeful activity. Problems will arise if the environment is poor, or the nature of the interaction is faulty. This 'given' applies in our workplace – ignore this law and the interaction between teacher and learner will leave both feeling frustrated and unfulfilled. That's why I plan to talk about feeling good, in order to think smart.

By the time we are three years old we have accomplished two of the most neurologically sophisticated challenges we will face in our entire lives – learning to walk and learning to communicate through language. All without formal teaching, thus providing a useful model of the way we learn naturally, or, what is commonly referred to as 'going with the grain of the brain'.

I suggest there are six characteristics that describe how we learn naturally; I intend to explain each one and the learning model based on them; and give you an example of a curriculum project that you could adapt to your own setting because it enables learners to feel good about themselves and think better as a result.

One of the most exciting developments in recent brain research is the better understanding of emotions. Basically they are a preparation for action – they motivate us to do things crucial for our survival, and to get our basic needs like food, love, sex, or achievement met. They include typically less intense ones such as interest, enjoyment, contentment, anticipation, boredom, frustration or disappointment. Emotions should be moderately activated for optimal learning, but when emotions become too strong, learning is inhibited.

When I was in primary school, we had a daily activity that caused me considerable emotional distress – mental arithmetic. You may remember the process: all students stand and when given a simple math question, they could sit down after giving the answer. I vividly remember being the last one standing, and can still picture the sea of hands waving below me as they try to get the opportunity to answer what was probably a very simple question. But in my emotional state, driven by past feelings of shame, embarrassment, and anger at the whole humiliating process, I could not think. I convinced myself that I would not know the answer before I even heard the question. I usually blurted out a number – any number – and when the kids all laughed, I sat down, primed for failure for the rest of the day. Not feeling good, or thinking smart.

Emotions are in place before thought (LeDoux 1998) meaning they are pre-thought, pre-language, and in a physiological hangover from ancient times, more primed for action than thinking. In that classroom scene I was set up to run away and hide, to fight my way out if need be, but I did neither. This inhibition of inappropriate emotional expression is a hallmark of a civilized society, but it creates problems if the expectation; that preparation for action to get a basic need met is frustrated.

Emotions are linked with getting innate needs met. The physical needs rank highly, but so do emotional needs like connection, meaning, control and significance. Humans have an innate need to be challenged, to grow and develop a sense of achievement by purposeful activity.

So, emotions, in addition to being a preparation for action, carry an expectation that that action will result in a need being met. An expectation based on experience of what getting that need met in a certain way means to us. If the need is met, the emotion is discharged and the expectation preserved. If the need is not met – my need for being included in the learning process for example – the emotional state continues, resulting in emotional distress.

This aroused emotional state, even if not apparent to others, is a sign that the smooth return to a 'set-point' (known as homeostasis) has not taken place, and the person remains 'on-edge'. This sustained level of arousal means perception of subsequent events is influenced more by a non-thinking survival response than a clear-headed rational one. You have probably wondered at times why it is so difficult to persuade a reluctant or disengaged learner to at least have a go, to get over that lack of confidence and experience what you know is possible for them. Sure, my teacher could have attempted to persuade me that it does not make any sense to believe I will not know the answer before I have heard the question. But not only are emotions in place before thought, they influence thought itself:

We evaluate what is happening or about to happen, in a way that is consistent with the emotion, thus justifying and maintaining the emotion. ... (and) discount or ignore knowledge that could disconfirm the emotion.

Ekman (2002)

Emotions not discharged through action, are usually discharged during a sleep phase known as 'rapid eye movement' or REM sleep – a phase where the brain is highly energized and metaphorically acts out an imaginary sequence to de-arouse the emotion while preserving the expectation. A sort of mental housekeeping to clear the work area and set us up to respond afresh to the next day. This raises the importance of a healthy restorative sleep cycle, for, if the housekeeping versus resting balance is disturbed, we wake feeling tired and unmotivated. No doubt you have seen signs of this in your classroom.

There are several factors that contribute to this 'lights on – nobody home' state that is alarmingly common. We live in an environment that is highly stimulating, and moments of calm reflection are rare in many of our young people. The likelihood of this stimulation continuing right up to going to sleep – watching a movie for example – leaves the brain with much arousal to be discharged. Insufficient or poor quality sleep in a culture such as ours that inhibits emotional display, as well as a curriculum with limited focus on action, means the many undischarged emotions severely reduce mental processing capacity (Griffin & Tyrrell 2005).

Powerful reasons indeed to understand the role of emotions in learning and find ways to work with them not against them – to consider the way we learned to walk and use language naturally.

Seeing it done

Firstly we were immersed in the activities, all around us were people already doing the things we wanted to do. In a sense all we had to do was use our natural ability to model what others are doing. Brain research has confirmed two specialised neurons designed to facilitate this task (Goleman 2006):

- Spindle neurons: about four times larger than other neurons, with long branch stems making high-velocity transmission of brain chemicals linked with social connection, bonding, love, pleasure. Found only in great apes and humans, they suggest we are hard-wired to connect.
- Mirror neurons: sense both the move another person is about to make and their feelings, and instantaneously prepare us to imitate that movement and feel with them. These neurons play a key role in perceiving intentions – the first step in understanding others and also building social relations and feeling empathy.

An interesting phenomena known as ‘pattern matching’ has been recognised for years in physics, but only recently applied to the way we make sense of our world. The brain works through a pattern-matching process (Griffin & Tyrrell 2003). My three-year-old son was on all fours once, looking at a string of hairy caterpillars on the footpath. When I came closer, he looked up at me and said: “Look Daddy, a train.” The closest match in his head was ‘train’. What he was really saying is “Here is a train-like thing”, highlighting the role of metaphor – the unknown or unfamiliar ‘like’ something we know or are familiar with. Much can be said about the brain as a pattern-matching organ; it is at the core of our perception, and explains a lot about emotional health and what to do when things go wrong. Sufficient to say here is that pattern matching is at the core of learning and using what we have learned. Patterns are the language of the emotional brain; they are not memories, they are essentially metaphoric, image-based, and they explain one of the most effective teaching tools in our repertoire: storytelling.

Ideological framework

The second characteristic of natural learning is the ideological framework that supports it – essentially that failure is not considered. An infant does not make a few unsteady attempts to stand and move forward and then give up. And even after being corrected so many times over syntax, tense and parts of speech, the thought of failure does not come into their mind. Perhaps the most essential dimension of curriculum projects I have been involved in, is the way they have re-defined success from nominal, numerical and competitive to visible, tangible and equitable. Visible in that young people see themselves and are seen by others as successful; tangible in that it is experienced in a way that leaves them in no doubt they didn’t have this feeling before the learning taking place; and equitable in the sense that all doing the learning, share the success of it. I know of no better way to achieve all three dimensions of success than travel – it is my preferred engagement strategy and learning objective. Travel provides the context for the learning, and, especially important for the educationally disenfranchised, a reason to work together on stuff that makes sense to them.

I mention context for a reason. Without context, learning is abstract, has the risk of lacking application, and limited in the way it can be synthesized in adding to what we already know and making a difference in our lives. If there is a single factor influencing the current need for a revolution in education it is assuming a model of learning designed for an industrial revolution age will work in an information-age context. Two centuries ago the learning was in a context of what was needed to function as a passive recipient of knowledge to work in a factory instead of the farm. And since then, learning has become increasingly de-contextualised (Abbott & Ryan 2001) while retaining the notion that learners are passive recipients of what the teacher-as-expert has to offer the learner.

Having a mentor

Humans learn best when the learning is embedded in a context, and the learners are surrounded by people already proficient in the task. The metaphor of a coach or mentor is more applicable than teacher, it is one that best explains the role of encouraging parent and siblings as infants are making those bold moves in mobility and communication. The infant is focused on doing what they see others doing, and the question “Why do we have to learn this?” never arises. No doubt you are already on the path of re-defining your role from teacher to mentor, from out the front to beside, from having all the knowledge to sharing the search and joy of discovery. And never underestimate the impact you invariably make when you take advantage of those opportunities to let your team see that you are indeed a master of your craft.

Exploring

We are who we are because our forefathers followed the urge to explore over the distant horizon. Risky to be sure, but the rewards of discovery made it all worthwhile. Our brain is a natural problem solver. It loves to make sense of things, to explore possibilities, to imagine what could be in place of what is. These innate competencies have enabled us as a species to add so much to the body of knowledge. Or as Sir Ken Robinson reminds us:

The one thing we have as human beings is this extraordinary power of imagination and creativity, and the ability to solve problems ... this isn't some whimsical idea.

ABC 7.30 Report 16/06/2009

Certainly the success of learning to walk and talk can be attributed in part to our imagination in seeing ourselves as doing it well even if we weren't, and to our creative ways to improve our mobility and communication when we saw the possibilities we had yet to reach.

Operacy – the skill of doing

The fifth aspect of brain-based learning is what Edward deBono calls ‘operacy’ – the skill of doing. He ranks it alongside literacy and numeracy in importance:

The idiom of education is that it is enough to build up the information base and that action is then easy. It is not. The skills of action are every bit as important as the skills of knowledge ...

We need to change our conceptions about thinking and action. To effect this change we need a concept such as operacy which gives status to the thinking involved in doing.

(De Bono 1985)

If you doubt the importance of learning by doing, imagine infants being taught the theory of mobility and being told about communication while lying mute in their bassinets. The reason they learn to walk and talk so well is because they approach it as if they can and already are doing it. The Canadians use the term ‘enacted sense-making’ – things make sense after action. Too often we do it the other way about: before you can *do*, you must *know*, and we discourage making it up as we go along. Learning by trial and error may not be the most efficient way to learn, but it sure beats inaction due to fear of failure every time.

Reflection – what next

The sixth important characteristic of natural learning is consolidating the experience or reflecting on what we can do now that we couldn’t do before. Learning, if it is to satisfy our emotional needs (thus ensuring we keep doing it), must fit with our experience and this takes place with reflection. Toddlers don’t remain unsteady on their feet; beginning talkers don’t leave it at baby talk, they move on to discovering language in written form. The sign of a healthy brain is the ability to go into and out of trance (Griffin 2007) – described as a state of focused attention. Stay there and you have addiction, never go there and you have ADHD, move into trance to learn, and out of it to consolidate the learning. To incorporate this natural learning ability requires mindfulness, meditation, guided imagery, visualisation - call it what you will – and if you are yet to experience the difference this can make you have something of real value to look forward to.

Now the model seen to encompass these six characteristics of natural learning is called ‘cognitive apprenticeship’:

Cognitive apprenticeship seeks to engage learners in real-world scenarios in which they act and interact to achieve useful outcomes. The workplace has a number of strengths as a learning environment: authentic, goal-oriented activities; access to guidance; everyday engagement in problem solving; and intrinsic reinforcement.

Kerka, S (1997)

Cognitive Apprenticeship has six dimensions:

- Modelling: showing how a process unfolds and giving reasons for why it happens that way.
- Scaffolding: a cooperative problem solving effort by teachers and students in which the express intention is for the students to assume as much of the task on their own as possible.
- Coaching: provides hints, encouragement, feedback, reminders, basically any type of assistance necessary to complete a task.
- Exploration: pushing students to try out their hypotheses, methods and strategies with the similar processes that the experts do to solve problems.
- Articulation: an expression of the learner to enable others to understand, and refine.
- Reflection: considering what has been accomplished and what may be improved upon.

Now, assuming we have some attachment to the model, let's see how it applies to the most pressing challenges we face as educators. These are, in my view:

1. poor engagement - retention rates dropping 81.3% in 2002 to 79.2 % in 2006

A starting point for engaging students is often an engaging curriculum and methods of teaching.

Signposts: Research points to how Victorian schools have improved student performance

An engaging curriculum and teaching methods creates an environment where young people feel validated, challenged by activities that fit in their emotional, physical, and social context; feel their passions are stirred, talents discovered and given room to develop, and an environment that allows great original ideas to flow. It is a curriculum tide that lifts all boats.

2. poor pedagogy – a prevailing view that the existing model will serve 21st century learners

...the crises in education stem from misunderstandings about how humans learn rather than any generalized failures of schools and teachers. The biology of learning is providing some powerful answers that, in turn, raise serious questions about whether our schools are able to prepare children for life in the 21st century. The present arrangements for conventional schooling are a reflection of the assumptions about human nature and learning that emerged to support the needs of the Industrial Revolution

Abbott, J & Ryan, T. (2001)

The crises in education - real or otherwise - will not be addressed by a single curriculum design no matter how cleverly devised and packaged. It is possible however, to focus on parts of the problem, and design a specific response that has a better than even chance of making a difference.

3. poor curriculum design – not enough purposeful hands-on activity. If there is one striking characteristic in learning to walk and communicate it is the role of practice over theory – doing it not just knowing about it.

4. poor ICT use - increased availability of computers in schools without a corresponding rise in teacher expertise for effective ICT-based learning.

5. poor reasons to engage - not enough opportunities for young people to commit to the learning process on their terms and for reasons that make sense to them.

An appropriate curriculum response that addresses these concerns could have four dimensions:

- **Ideas** - understanding how new brain insights shed light on thinking and behaviour
- **Design** – design projects that provide a context for amazing skill development
- **Enterprise** – using student enterprise and ICT as an engagement and learning strategy
- **Travel** – the perfect reason for young people to commit

Several years ago I was offered a position at an independent school keen to provide meaningful opportunities for the growing numbers of young people who didn't want to be at school. I had had some visible success with early school leavers and kids on the streets, so the school thought I was their man. After accepting my terms (complete autonomy) and my operating mantra (I get paid for my results not my methods), I took the position.

The first priority was to work on the environment, for thinking does not take place in a vacuum, it works in a social context – it is called 'social cognition'. Change the physical environment and you change the thinking. We decorated the room, curtains, padded chairs, boardroom table and potted plants. Allow for the social environment and you get people working together driven essentially by how they *feel* not just out of going through the motions. The reason for being together was to learn skills that we could market to fund travel, and it was one go/all go. As well as dealing with the physical environment, we dealt with the virtual one. Manipulate the virtual environment and you get amazing results.

The students applied for an advertised position, went through an exhaustive selection process, detailed their skills and what they could bring to the position all as though they were experienced and qualified professionals.

Have you ever wondered how young people learn to play computer games? They certainly don't get taught, and they don't read the instructions – they are successful because they take on the persona of a successful person immersed in an engaging challenging activity.

Taking on a virtual identity constitutes a form of identification with the virtual character's world, story, and perspectives that become a strong learning device at a number of different levels.

Gee (2003)

The learning is by 'stealth', and before you start thinking you need flak jackets and night vision eyewear for the model, consider Professor Gee's definition:

...when the learners are so caught up in their goals that they don't realise they are learning or how much they are learning or where they actively seek new learning.

Gee (2003)

How, then, you might ask, do learners get 'so caught up in their goals' that they don't realise they are learning. Stealth learning works best when the various learning activities (or 'subjects') are embedded into a single project. This allows learners scope to face the tasks without any pre-conceptions from the labels of 'maths' or 'English'. It also provides for the two agendas of stealth learning to function. One agenda is overt, the nature of the project as understood by the teacher and the learner. The other agenda is covert, specific learning tasks corresponding to the way the brain works best and respect for the emotional dimension embedded into the learning activity.

Its success lay in the extent to which the learning went with the grain of the brain, and the application of the six dimensions of cognitive apprenticeship.

In each of the four years I was there, the students funded several days on the snowfields, and a week on chartered yachts by offering their ICT skills on a fee-for-service basis for teachers (Edmunds 2005). And despite the knowing predictions about the room décor from my colleagues, the potted plants were taken out four years later with all their leaves intact.

Emotions, as we have said, are a preparation for action. They are linked with an expectation that the action will result in an innate need being met in the way it has been previously. A negative or limiting emotion will be associated with the expectation of disappointment or futility based on the way we make sense of that previous experience. In the school context, engagement with learning or the problems associated with young people not feeling engaged is an emotional issue, not an intellectual one. The reason I point this out is that we are talking about a different part of the brain. It is the action, primal, non-thinking part as distinct to the rational thinking brain. And, it takes first call on any stimulus the senses pick up – all thought has been through a sort of 'emotional filter' before awareness, a filter that colours the individual's perception, expectation, and response to that stimulus. My expectation of success in mental arithmetic is zero, and many of the people you are dealing with have similar expectations that set them up to feel failure even before they know the task.

The challenge then, as I see it, is to create the opportunity for those we deal with to feel good, to have that expectation of success, and that continue to leave them with feeling fulfilled and validated as people – important emotional needs we all have. Implicit in this challenge is a new approach; more of the same will not cut it for they bring to the classroom all the associations of not being good enough. A new physical, emotional and social environment is essential.

Most of my teaching has been involved with reluctant learners and the educationally disenfranchised, and I suspect many of your learners have similar backgrounds. If there is one thing you take from today, make it the thought that a revolution in education is needed – doing more of the same will not work in this century. With this in mind, the new literacy becomes a language of doing things differently with vision and passion; the context becomes one you manipulate, both real and virtual for it generates feelings of excitement and expectation. The new learners, freed from the dreadful shackles of limiting beliefs will *feel good and think smart*. You will too.

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- For details of 'C21 Ideas, Design, Enterprise, Travel' – a one day seminar expanding on the ideas of this presentation, see: <http://www.plasform.com.au>