

An Outline of Integral Learning

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Teaching as an art and a science



Teaching is both an art and a science. We all know what good teaching is when we experience it. Since the early 1970's I have been attempting to understand and articulate what a good teacher does so that we can all learn how to be better teachers. My personal theory of learning and teaching has been informed and clarified by my own research and by the work of other learning theorists and commentators on learning, thinking and intelligence. Parallel to this research I have been developing a theory of learning from the 'chalkface'. The depth and richness of my current understanding about learning and teaching has developed from, and owes much to, my day to day work with many, many thousands of learners and teachers.

What learning do I value?

The critical question in designing education for learning, is *what is the nature of learning that we value?* Humans can learn in a variety of ways. We can learn like parrots, playing back like a tape recorder what we have heard. Humans can learn like robots - 'monkey see - monkey do' type learning carrying out actions without thought, or we can assume attitudes and beliefs without questioning them. Human learning has the capacity to be far richer than this. We can learn in a way that transforms; in a way that endows our experience with meaning; in a way that empowers us to adapt, to perform and to create.

I value learning that:

- develops **understanding and personal meaning**
- develops **competence through mastery** of skills and processes
- develops the learner's ability to **articulate and share their knowledge**
- enables the learner to **transfer** learning from one context to another in authentic life situations

What supports and enhances the learning?

This is an enormous field. For the purposes of this outline let me simply summarise a few of my key beliefs about learning and the implications of these beliefs in terms of learning design.

- 1. Learning requires moving outside our ‘comfort zone’; it involves taking risks. Learners will not take a risk unless they have a secure base.**

*Although the **Integral Learning** design model focuses more on engaging and stimulating appropriate ways of thinking and knowing, it assumes that the learning environment is supportive and yet challenging for the learners concerned.*

- 2. Humans move towards experiences from which they gain a sense of self worth and achievement.**

It is critical, in designing any learning that we think clearly about the readiness of the learner(s) and set challenging but achievable tasks. No design model can provide this information for a teacher. Any learning design should be viewed with your particular learners in mind.

- 3. Learner driven learning is more likely to be effective and meaningful.**

***In principle** this means good learning design will maintain **ownership** by the learner, nurture a sense of agency and tap intrinsic motivation.*

***In practice** this means:*

- surfacing and connecting with students’ experiential knowledge, their personal story knowledge.*
- finding out what students know, what they want to know, how they want to learn and letting it influence your design.*
- designing to include open ended aspects; aspects that require self expression; giving choice*

4. Learning with meaning and understanding involves constructing and reconstructing meaning from our experiences.

The term ‘constructivism’ has been thrown around with gay abandon in educational circles. What does it really mean?

Constructivism

There is a belief shared by most psychologists who study human learning, that from birth to senescence or death, each of us constructs and reconstructs the meaning of events and objects we observe. It is an ongoing process, and a distinctly human process. The genetic make up of every normal human being confers upon all of us this extraordinary capacity to see regularities in the events or objects we observe and, by age two or three, to use symbols to represent these regularities.

Joseph D. Novak (Novak 1992)

Powerful human learning involves constructing and reconstructing our own meaning in the world. ***However this does not mean that an individual’s learning should be limited by the bounds of the world they experience directly. Nor does it mean that the learner is left alone to construct meaning entirely unaided.***

The open discovery approaches of the seventies were misguided in the sense that they did not recognise that the challenge for educators is to help individuals construct, for themselves, the understandings that other minds have discovered before them. Left to chance, or open discovery, my belief is that you would have to be Einstein, or Einstein-like, to discover what he discovered. In words written a long time ago. . .

The task of the teacher is not to put knowledge where it does not exist, but rather to lead the mind’s eye so that it might see for itself.
Plato

In some schools, the swing away from a heavy emphasis on ‘knowing about’, and ‘knowing what others know about’, resulted in many students going through school without knowing vital facts—eg maths tables facts. You are limited and constrained in mathematical thinking and problem solving if you have to work it out, look it up, or use a calculator every time you want to process something like seven times four. The challenge for educators is to discern what facts, what procedures, what skills need be automated to ensure that further learning and thinking is not impeded. The learning secret is to ensure that those facts are only automated after deep understanding is in place.

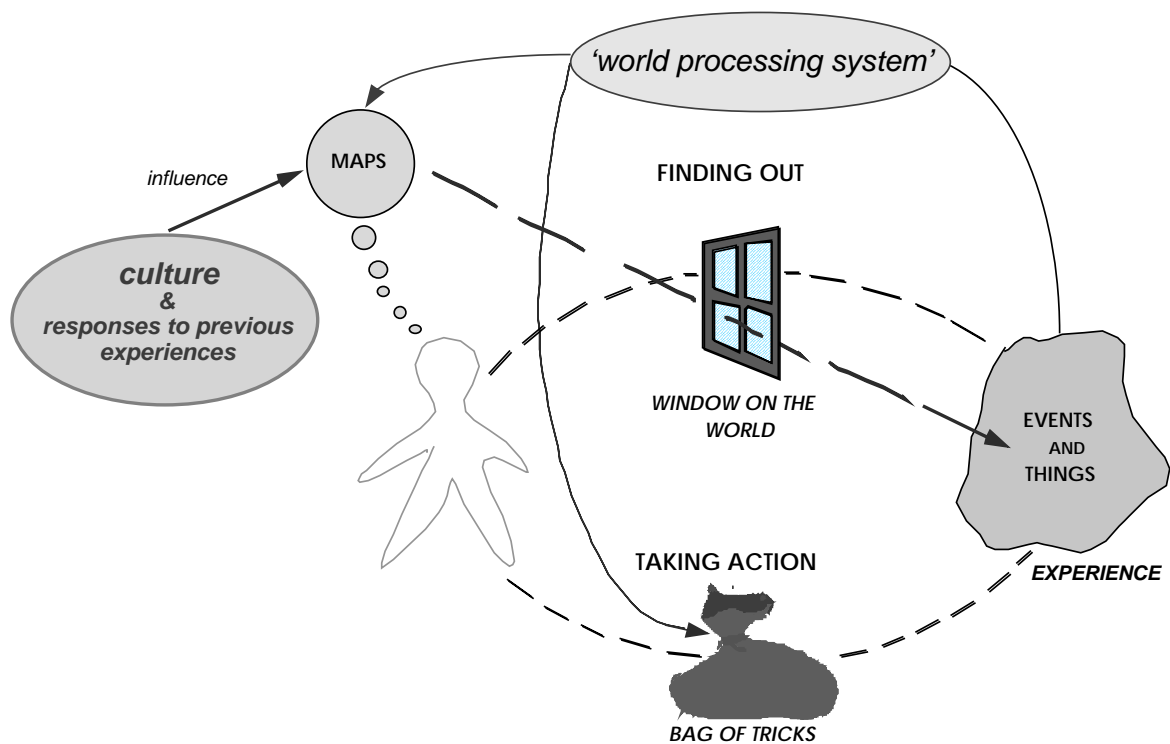
There are many names and labels given to the constructivist notion of learning. They all have as key components - action or experience,

reflection, intention to improve or enhance action, action, reflection, refined understanding, honed skills. The learning process is described as an ongoing spiralling process.

The essence of a constructivist approach is the construction of meaning by the learner. This does not mean that the learner is left alone to learn, nor does it mean that whatever meaning the learner makes is accepted. The role of the teacher is to decipher what meaning, what ‘mental models’ the learner is already thinking with and then to design experiences and ‘nudge’ processing so that the learner’s ‘mental models’ are challenged, enriched, expanded and elaborated.

Learning as making meaning from experience. . .

Action learning, experiential learning, reflective practice, etc.



Experiential Model of Learning -Richard Bawden's representation of Kolb's model (Kolb 1984)

Essentially this model means that we **experience** the world of events and things, we **process** that experience to build our own understandings, our own mental models or maps and to develop our **skills** (‘bag of tricks’) for **acting & responding** in our world. If we are left alone to process our experience (no talking to anyone else, no teacher intervention) the way we would process our world would be largely determined by our thinking or processing style.

I believe it is the teacher's task to:

- 1. Find out what students know and can do**– *what are their current 'mental maps' or understandings? What can they do and how well? What do they want to know; what do they want to be able to do?*
- Design learning experiences that:
 - **challenge** their current **mental maps**
 - **enlarge** and **expand** on their experiences
- 3. Nudge** their processing so that their personal meaning making goes beyond simply their own processing style.

5. The human brain-mind-body system is capable of multiple ways of knowing. 'Knowing' is deepened and amplified when there is an integration of our ways of knowing.

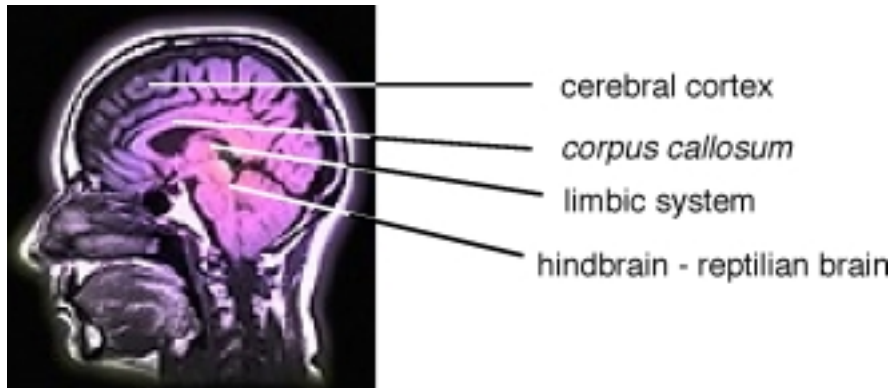
What does this mean? How does it inform learning design? And what does it mean to “nudge processing” so that personal meaning making goes beyond simple their own processing style?

How the brain processes information

The brain is an incredibly complex organ and our understanding about the brain continues to develop at a rapid rate. If you think, for a moment, about how we understand the functioning of the human body you can see that we have both a macro and micro view. The *macro* view thinks of the body as an interrelated set of systems with identifiable organs eg respiratory system, cardiovascular system, reproductive system etc. At the micro level we can also study and know the functioning of each system and each organ. And we could even focus on ever more minute aspects until we knew the functioning of the body at many different levels from a broad systems approach to a detailed cellular approach. What I'm about to outline is a broad systems view of some aspects of the brain and brain processing. Think of it as a simple but powerful model.

Physically it is clear that the brain has *two hemispheres* and that it has three evolutionary levels – the *hind brain or reptilian brain* (instinctive behaviour, autonomic body control); the *limbic system* (our regulatory centre, vital role in long term memory, fine sensory processor); the *cerebral cortex*(intellectual activity, consciousness).

Triune Brain – three evolutionary levels



One broad aspect of the brain’s function that emerged from research on split brain patients in the 1950’s-1970’s is that the brain has two quite different ways of processing information and these different modes of processing are attributed to the two different hemispheres. The diagram below illustrates those two methods of processing.

Right mode versus left mode processing



Left Mode

Right Mode

CAT

Words



Images

5 - five

*Symbols
Numbers
"Counts"*



*Patterns
"Fiveness"
"Estimates"*



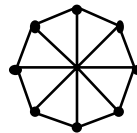
Parts



Wholes



*Sequential
Linear
"Cause & effect"*



*Simultaneous
Patterns
Connections
Integrated*

Source: Adapted from Williams 1983, p.5.

They have become known as 'right mode' processing and 'left mode' processing. Not everyone actually uses the left side of their brain for analytical processing and the right side for intuitive processing. Left handers especially may (or may not) have the location of the types of processing reversed. However, it seems that all brains do use two distinctly different forms of processing information. One mode of processing involves a synthesising, pattern recognition processing which is described as holistic and intuitive. This 'right mode' processing, as it has become known, focuses on 'the forest'. The other main mode of processing is linear and sequential processing and is described as analytical, logical processing. This 'left mode' processing focuses on 'the trees'.

Just as we have hand, eye and leg dominance, we have brain dominance in which individuals may show a preference for either more right mode processing or more left mode processing. Some people are 'ambi-minded', like being ambidextrous and rely equally on both modes of processing. We all use all both modes of processing but we may rely on or show a preference for one mode of processing over the other. I describe myself as right handed because my right hand is my dominant hand – I show a preference for using my right hand over my left for most activities. This right hand dominance does not mean I do not use my left hand – I use both hands constantly but my right hand is my 'lead hand'. Similarly with

thinking – you may show a preference for left mode thinking but you use both modes of processing.

It turns out that describing the way we process information is not as simple as the two main ways of processing that were identified through the research on split brain patients.

Ned Herrmann's Whole Brain Model of Processing

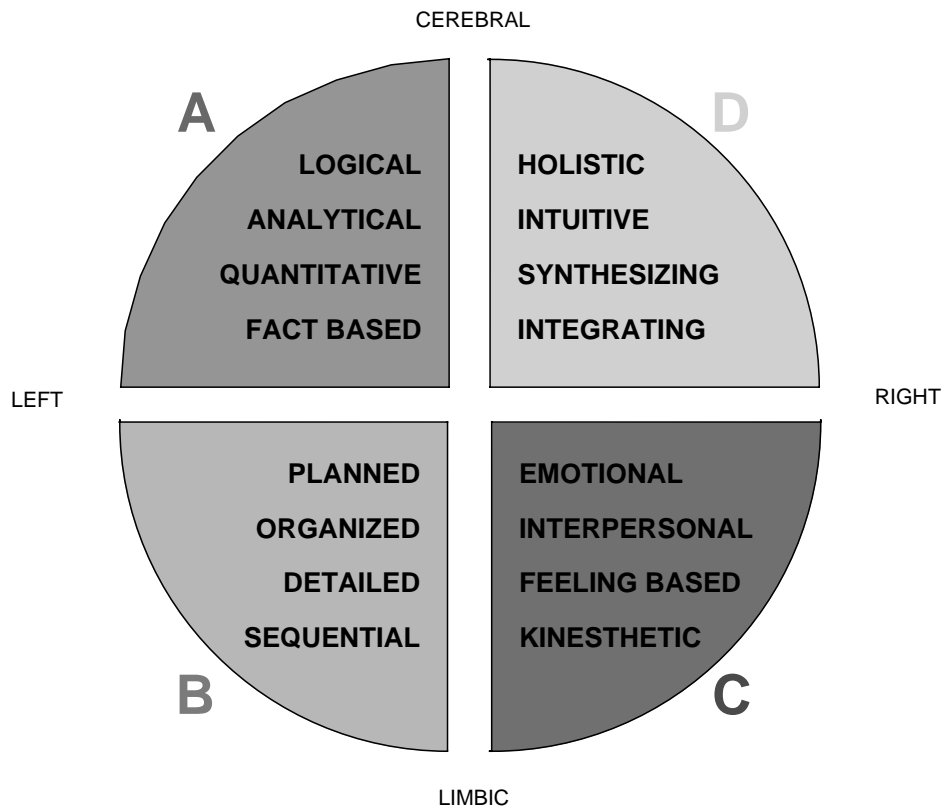
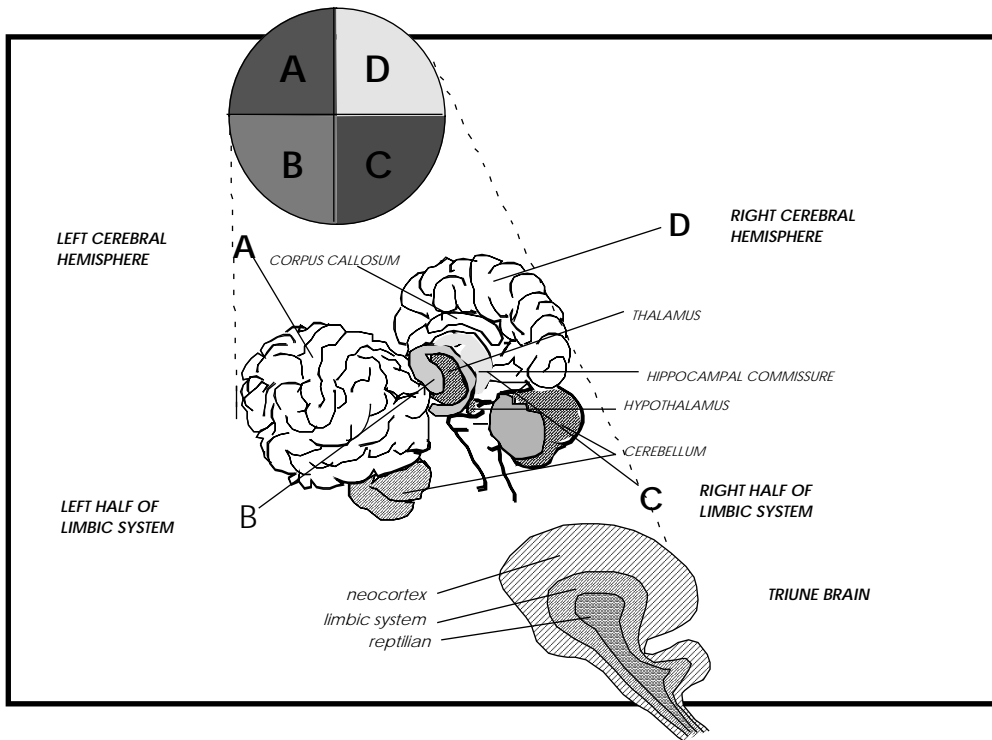
Consider what we know about the brain physically and in terms of styles of processing.

- two hemispheres - characterised by different types of processing, one type linear and sequential focusing on bits, the other intuitive, recognises patterns, holistic focusing on the forest.
- three evolutionary levels
 - * cerebral cortex - rational, conceptual
 - * limbic - emotional, 'doing', key factor in long term memory
 - * reptilian - basic memory, instinctive behaviour, autonomic body control.

Put the ideas above together and you have a model of brain processing which involves sides [hemispheres] and levels. In an excellent book, *The Creative Brain*, Ned Herrmann (Herrmann 1989) has put these ideas together in what he calls the **WHOLE BRAIN MODEL** of learning, thinking and doing. On the one hand we have styles of processing attributed to different sides of the brain - the one more analytical, logical, factual, sequential and controlled; the other more holistic, intuitive, spontaneous and free flow. **AND** we have at least two different ways of processing corresponding to two different levels of the brain - the one more abstract, rational and conceptual [neocortex/cerebral], the other [limbic] more to do with processing sensory and emotional information - doing and feeling rather than reflecting. Our conscious thought can be stimulated by what we are feeling and sensing (limbic) as well as by what we are thinking (cerebral).

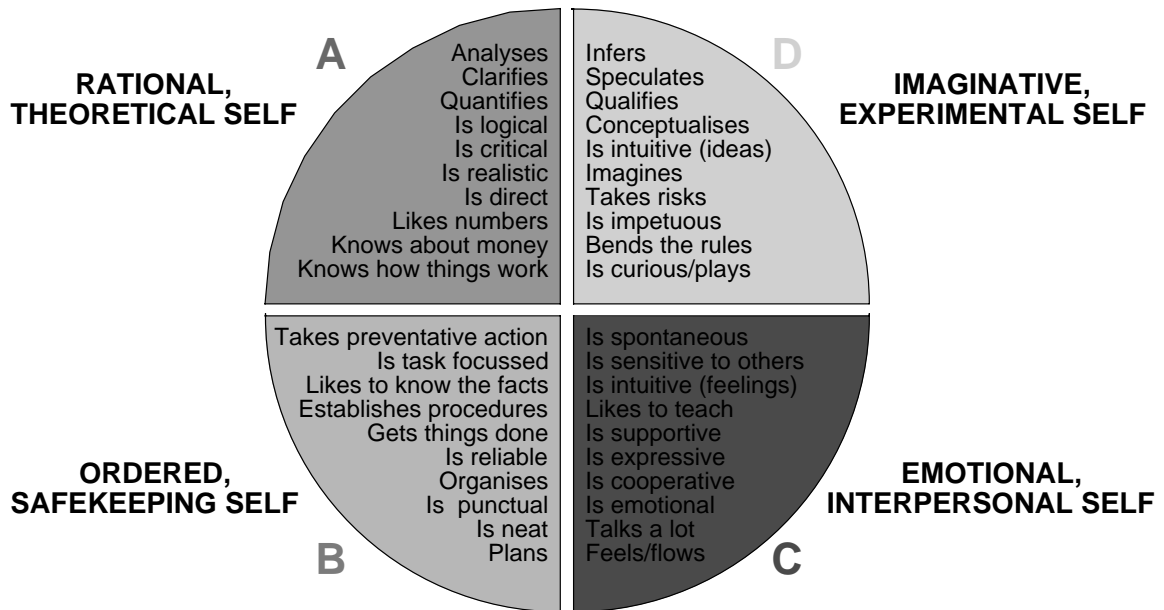
Each of us has a preference pattern for the way we rely on, or engage in using each mode of processing. The important point is that you use all modes of processing – you are not 'right brained', 'left brained' or 'half brained'. Everyone is 'whole brained' but we differ in the extent to which we use or rely on each mode – we have different thinking styles.

Ned Herrmann's Whole Brain Model



Adapted from : Herrmann N., 1996 The Whole Brain Business Bok p.21, McGraw-Hill

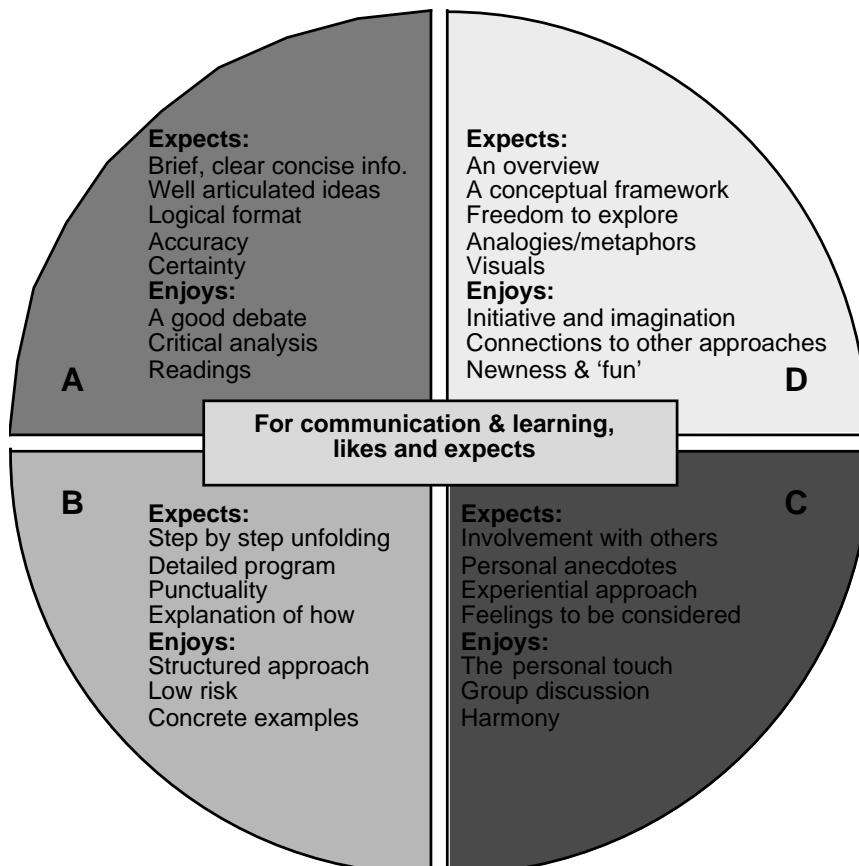
Our Four Thinking Selves



Adapted from : Herrmann N., 1996 The Whol Brain Business Bok p.21, McGraw-Hill

Communication & Learning

Likes & expectations



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Although, as the last diagram shows, different thinking preferences may result in different likes and expectations with regards to learning it is my contention that **effective learning** involves applying the appropriate style of processing to the task. If a learner is highly inclined towards one mode of processing - one quadrant or one side of the whole brain model, or the limbic versus the cerebral, he or she will tend to approach tasks in that mode even when it's not the most appropriate mode - even when it's not likely to lead to success. The art of being an effective learner and 'doer' is having the ability to draw on the appropriate mode for the task. The art of being an effective teacher is to engage the learner in the appropriate thinking mode(s) for the task.

Let's take creative writing for example. A student who has a strong preference for left mode processing and who is left alone to write a creative piece of writing tends to write in a very literal descriptive way. Someone with a strong right mode preference is automatically engaging processing that will bring forth images and emotion. The question becomes what strategies will be effective in engaging the person with a preference for left mode thinking in right mode processing. The diagram on the next page illustrates teaching strategies that stimulate various modes of processing.

The danger with this model is that you can walk away from it thinking "*Oh okay. If I use a variety of strategies from around each of the modes I'll catch all the learners eventually.*" It's not as simple as that. It's not about catching them in their style, nor leaving them in their style. How do we help learners construct understandings that others have made before them? Unless you have a thinking style like Einstein you will never come to understand what he understood.

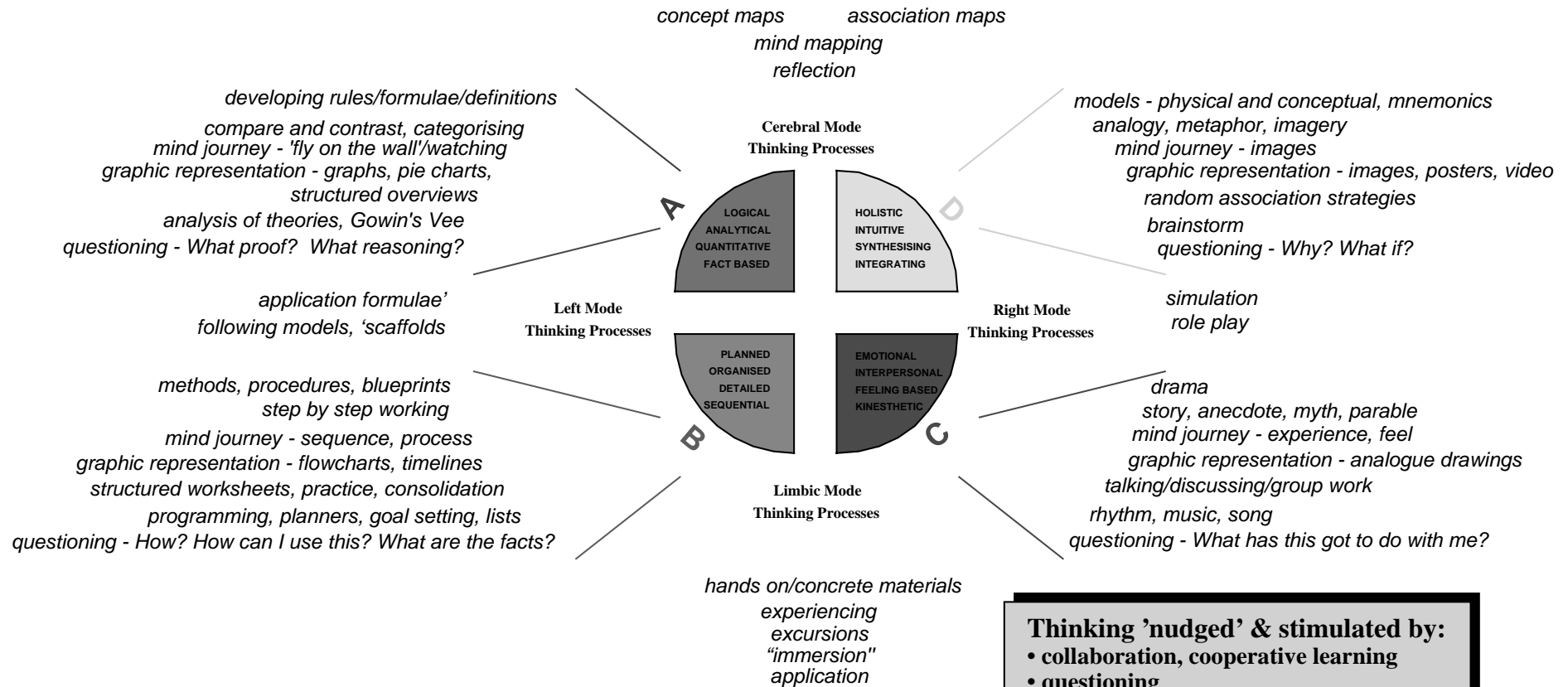
If the learning I value involves:

- developing **understanding and personal meaning**
- developing **competence through mastery** of skills and processes
- developing the learner's ability to **articulate and share their knowledge**
- enabling the learner to **transfer** learning from one context to another in authentic life situations

. . .then for each individual, **all modes of processing need to be stimulated and integrated regardless of personal thinking style.**

Truly effective learning, learning which can be transferred to new situations and communicated to others, will be known in the many languages of the brain and these ways of knowing will be integrated and coherent. Knowing will be an integration and internalisation of our experiences, our feelings, our imagination and our analysing and it will find expression in many modes of 'doing' from procedural application to a variety of creative forms.

Strategies to Promote Integral Learning

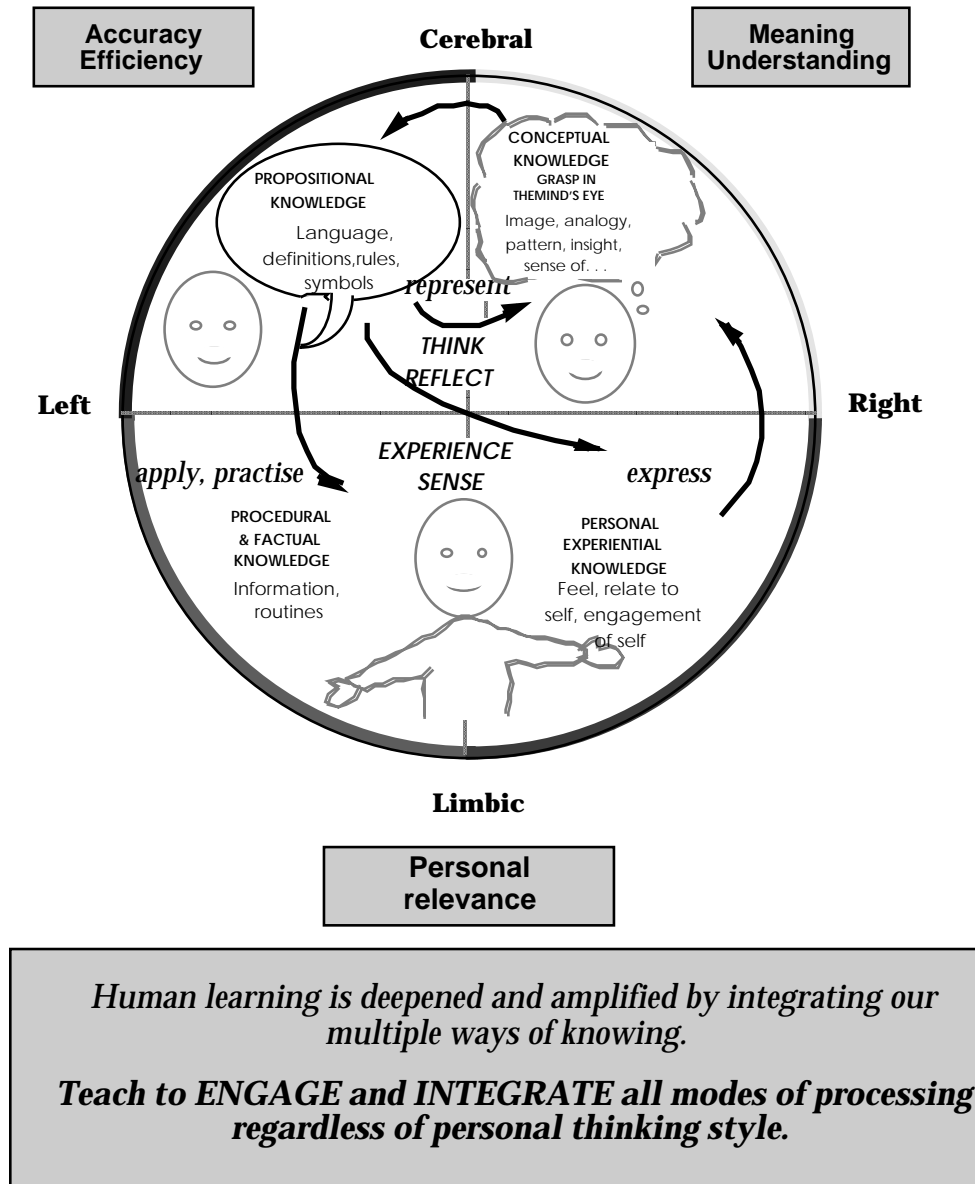


Thinking 'nudged' & stimulated by:

- collaboration, cooperative learning
- questioning
- posing problems, challenges
- design process
- games
- predict -observe-explain
- teaching, re-presenting eg multimedia

Integral Learning

Appropriate mental processing for learning - integration of experiential knowledge, imagination, understanding, information, clarification and action



In designing for learning it is essential that you clarify what outcomes are important in each of the ways of knowing. What are the understandings or big ideas you want students to develop? How does this learning relate to what they know now (personal story knowledge) or want to know? What definitions, rules, theories statements do you want them to know and be able to articulate? What procedural factual knowledge do you want them to develop? What processes or skills do you want them to master?

You may find the templates on the following pages helpful in designing for learning.

LEARNING EXPERIENCE & STRATEGIES

Strategies that involve clarifying, analysing, defining, debating, formulating, and establishing procedures.

Strategies that involve exploring, designing, developing models, finding patterns, representing in image and metaphor.

LEARNING OUTCOMES IN DIFFERENT WAYS OF KNOWING

What do they need to be able to state or articulate? - rules, definitions theories?

What understandings, ideas, models?

A D

**Focus
Topic, theme**

What facts, procedures, examples, skills do they need to master?

How does this relate to their personal lives, what do I want them to value?

B C

LEARNING OUTCOMES IN DIFFERENT WAYS OF KNOWING

Strategies that involve gathering information, following rules, following procedures - consolidating facts, developing mastery of skills and procedures

Strategies that evoke feelings, develop attitudes, and connect with students' personal story knowledge. -sharing, discussing, experiencing, sensing, intuiting, expressing.

LEARNING EXPERIENCE & STRATEGIES

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