

HOW CAN SCHOOLS BECOME MORE STUDENT CENTRED TO PERSONALISE AND ENRICH LEARNING EXPERIENCES FOR STUDENTS?

A research investigation undertaken as part of Principal's sabbatical leave.

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INTRODUCTION

Aurora College is a newly established Year 7 to 13 coeducational decile 2 school in Invercargill.

Our school was established in difficult circumstances following a network review of schools in Invercargill.

Our initial focus was on establishing a shared vision for our school. Simply, but boldly, we envisioned 'success for all'. We also wanted our school to be future focused, student centred, supportive and safe.

It became evident very quickly that the issues of pastoral care and behaviour management required significant attention. Pragmatic issues such as completing our staffing profile also dominated our time. Ideally we would have liked to spend more time using the latest ideas from research and best practice to develop learning structures, and design learning experiences.

Given the nature of our school community, making learning enjoyable and meaningful is vitally important. Many of our students have had significantly restricted life experiences and encounter genuine difficulty with learning. Learning needs to be accessible, and success needs to be achievable.

Sabbatical leave provided an opportunity for reflection, research and the planning of the next steps of the development of a more student centred approach.

As I progressed through my sabbatical programme the nature of my study evolved into a broad investigation of personalised learning and the concept of student centred learning. I needed to satisfy myself that there was a good research base supporting a less constrained approach to learning. Ultimately my goal was to find concepts and methods of application of a more individualised and student centred approach to learning which genuinely improved outcomes for students.

The intention of this report is to provide our staff with some research summaries, collations of recent New Zealand resources, and ideas from other schools.

METHODOLOGY AND PROGRAMME

Defining the next step – the inclusion of student centred learning within a school’s curriculum plan.

Our school curriculum plan is intended to form the framework for all the teaching and learning within our school. It binds together the driving influences behind the teaching and learning.

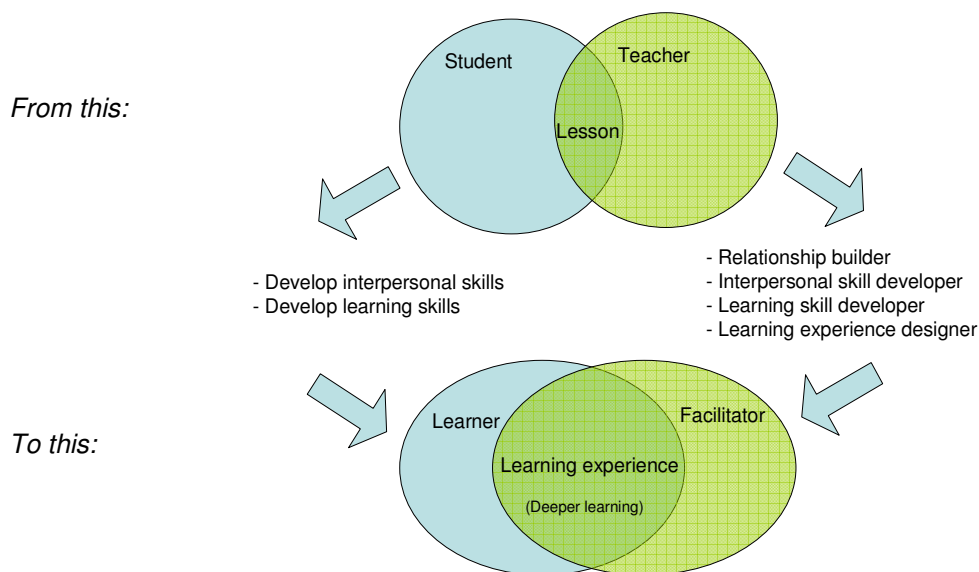
Such things as the school’s vision, charter goals, key competencies, values, career education, ICT, literacy, numeracy, thinking skills, methods of assessment, Maori and Pasifika perspectives all combine to influence the what and how of teaching within a school.

From a teacher’s perspective the curriculum plan provides both a direction and a framework for planning the teaching and learning. However, I believe it is appropriate that curriculum plans also promote and facilitate the concept of student centred learning.

As a school, an important next step for us is to explore how teaching and learning can become more student centred. By further developing a student centred approach our school’s vision of ‘success for all’ will become more of a reality.

The learning culture, the structures of learning within the school, and what happens in the classroom all contribute to a student centred approach.

Our experience within the environment of our school community has already taught us we need to develop both the interpersonal and the learning skills of our students. We also need to develop the skills of our teachers as well as creating a school environment that allows these developments to take place. The traditional model of classroom or lesson in which the teacher’s world and the student’s world simply overlap needs to be challenged.



Aurora College Curriculum Plan Section A

I wanted to explore the principles behind a student centred approach to learning. I also want to get my head around the broad concept of personalised learning and see it in action.

The methodology I used for my sabbatical involved researching learning based on knowledge of the brain, collation of recent New Zealand material focusing on teaching and learning, and visiting schools to explore some examples of best practice. All of these aspects explored the interrelated concepts of student centred learning, personalised learning, differentiation and enrichment.

BRAIN AND LEARNING RESEARCH

Julia Atkin

During my time as Principal of Temuka High School (Opihi College) I had worked with Julia Atkin within an ICT cluster of South Canterbury Year 7-13 schools. I was introduced to Ned Hermann's whole brain model and the concept of integral learning. There were two key aspects of this work which I saw of significant and immediate benefit. Firstly, the ability for teachers to understand both themselves, other staff and their students as learners. Secondly, the formation of a framework for the design of learning experiences, that was simple, allowed for student input, and created deeper learning for students.

The timing of my sabbatical coincided with the beginning of a Julia Atkin course about teaching for effective learning.

Dr Pat Wolfe

In 2006 Stephen, Principal of Athena Montessori College, gave me a recording of a key note address by Dr Pat Wolfe. The address focused on the significant brain development occurring during adolescence. Dr Wolfe's collation of neuroscience research dispels the myth that all the significant brain development occurs in the early childhood years. There are a number of excellent articles available on the Mindmatters website www.patwolfe.com, in particular 'The Adolescent Brain: a work in progress'. Research shows that significant development of the brain occurs during adolescence, it also helps to explain why adolescents behave as they do.

Eric Jensen

Eric Jensen has written a number of notable books about learning. Perhaps the most widely acclaimed are 'Teaching with the Brain in Mind' and 'Brain based learning'. However, 'Enriching the Brain' was an influential book for me. Eric Jensen's books translate neuroscience into practical classroom application. Enriching the Brain explores the concept of enrichment which simply put is a biological response to a contrasting environment.

COLLATION OF NEW ZEALAND MATERIAL

Making a Bigger Difference for all students Hangaia he huarahi hei whakarewa aka I nga tauira katoa Schools Strategy 2005 – 2010

I was involved in the roll out of this strategy in 2006 delivering seminars in Invercargill and Dunedin. The strategy identifies three priorities for schooling in New Zealand for the next five years.

- All students experience effective teaching
- Children's learning is nurtured by families and whanau
- Evidence-based practices are used by all involved in schooling

These priorities form a good basis for reflection of what is happening within your school as well as influencing your strategic planning.

The New Zealand Curriculum Draft for Consultation 2006

This document was released midway through 2006. The consultation process directed our focus largely to the organisation and content of the essential learning areas. The overall vision and principles of the curriculum document as well as the key competencies and values are equally significant. In particular the section on Effective Pedagogy and Designing a School Curriculum are worth further reflection.

Students First Secondary Futures Hoenga Auaha Taiohi

Early in 2006 I participated in a forum exploring the secondary futures theme Students First. This forum contributed to the development of the document released to schools in October 2006. Students First is one of the 5 secondary futures' themes. The remaining themes are Inspiring Teachers, Social Effects, Community Connectedness, and Technology. Students First explores learning outcomes, learning experiences and paradigm shifts associated with this theme.

Let's talking about Personalising learning

This brief document was released by the Ministry of Education in 2006. In the Minister's words it refers to personalising learning 'as a way of describing the shifts that are happening in our education system as we respond to the new meaning of knowledge in the 21st century.' This document serves to stimulate thought and discussion about the broad concept of personalised learning.

SCHOOL VISITS

The choice of schools I visited was mainly influenced by recommendations of colleagues and web-based research. I attempted to find various examples of a more student centred approach to learning and school structures. The selection of schools included two primary schools, a specialist school and a range of secondary schools. Some of the secondary schools visited also had a particular focus. I visited schools in and around Adelaide and Brisbane. The Adelaide trip had a strong senior school pathways/careers focus as a key contact was a transition broker (a type of advisor who worked with a cluster of schools developing careers/transition programmes). This focus linked well with the CPaBL (Creating Pathways and Building Lives) project our school is currently involved in. The Brisbane trip was influenced by web-based research on the Queensland New Basics project and the concept of Rich Tasks.

Schools visited:

- Golden Grove High School – Adelaide
- Windsor Gardens Vocational College – Adelaide
- Fremont Elizabeth City High School – Elizabeth City, Adelaide
- Bridgewater Primary School – Bridgewater, Adelaide
- Australian Science and Mathematics School – Adelaide
- Chevallum State School – Sunshine Coast, Brisbane
- Calamvale Community College – Brisbane
- North East Adelaide Department of Education and Children's Services

A number of the schools visited had strong similarity to newly established schools within New Zealand such as Alfriston College, Botany Downs and Unlimited Paenga Tawhiti.

All the schools had certain practices, learning structures or programmes that linked to the concept of student centred learning.

The sabbatical leave provided not only an opportunity to visit these schools but also the time to link research to some examples of best practice.

FINDINGS AND IMPLICATIONS

BRAIN AND LEARNING RESEARCH

It's not too late at high school – Success can be for all – there is a real need to understand the brain and learning process.

There is a research base that clearly shows that it is not 'too late' to significantly influence the learning of all students when they reach high school.

This has to be very reassuring, and indeed empowering for all high school teachers and principals.

The knowledge that the student brain is significantly developing through the high school years gives a compelling reason to look very carefully at the learning environment within high schools and explore the concept of personalised learning. Having a closer look at some of the research seemed like a good way to begin to investigate student centred learning.

This section is significantly based on Dr Pat Wolfe's article the 'Adolescent Brain: a work in progress'.

Pat Wolfe's work leads you through the development of the human brain. An understanding of terms like cortex, frontal lobes myelin, and amygdala develops as you read her work. Dr Wolfe has an ability to make the complex brain seem understandable to the non-neuroscientist.

All parents can relate to when their children went through the 'terrible twos'. Understanding the developmental processes occurring in a typical 2 year olds brain enables you to understand their behaviour.

Around two years of age there is a large build up of connections with the brain. This is followed by a massive pruning of connections. This allows the strongest and most efficient connections to function more effectively. The often erratic behaviour at this age reflects the changes that are occurring in the brain.

Wolfe dispels the conventional wisdom that an adolescent has an adult brain. Although a brain reaches its full size by puberty it is not fully developed.

Another significant period of 'pruning connections' with the brain occurs during adolescence. Pruning the excess connections produces a more efficient adult brain. The process of myelination is also not completed until around age 20. Myelin is a fatty material which allows electrical impulses to travel faster and more efficiently.

The frontal lobes (the part of the brain located behind the forehead) are still undergoing significant development. The development of the frontal lobes is very significant as it is part of the brain in which 'executive decisions' are made, it is often referred to as the CEO of the brain. Such things as reasoning, goal and priority setting, ability to make sound judgments, planning and organisation of multiple tasks, impulse inhibition (the delay of gratification), emotional control and determining right

from wrong all occur in the frontal lobes. This seems to be a shopping list of the things adolescents need.

The cerebellum is developing during adolescence. This controls coordination and movement. Some researchers believe it could also coordinate social interactions and play a role in problem solving. If so physical activity could play a significant role in developing these functions.

At a time when we are reviewing the time spent on physical activity in schools to combat health issues such as obesity there could also be significant benefits to brain development.

Another area of the brain that is still developing is the limbic area in the centre of the brain. One of the major structures in this area of the brain is the amygdala. This plays a significant role in emotional reactions including the 'fight or flight response'. It takes precedence over thoughtful reflection. Studies have shown that in the teen brain the emotional centre often dominates over the rational prefrontal cortex.

There are two really significant implications of this research. Firstly, if the brain is still developing we must be able to influence its development. Secondly, we can use this information to understand the behaviour and learning process of teenagers. Perhaps also more importantly we can help teenagers understand themselves and what is happening to them.

The dominance of the amygdala over the frontal lobes suggests that adolescents may not be as good as we think they are at reading social signals even though they spend much of their time socialising. They may also misunderstand the emotions of adults particularly when they are warning them about inappropriate or risk taking behaviour.

The work of Dr Wolfe that I reviewed makes two other significant points worthy of mentioning.

She dispels the myth that alcohol kills brain cells which is perhaps reassuring to some. However, she combines research together to clearly show the significant detrimental effects that alcohol and drugs have on the development of the brain during the period from age 11 to 20.

She also explores the sleep pattern and requirements of adolescence. Our sleep patterns are determined by circadian rhythms, a sort of biological clock that determines not only how much sleep we need but also when we become sleepy at night and when we awake in the morning. Teenagers need more sleep than when they were children, and more sleep than that of adults. Their circadian rhythms are also set later than those of children or adults. In order to function well and remain alert during the day teenagers need 9 hours 15 minutes sleep a night. Sleep is a time when brain cells replenish themselves and when connections made during the day are strengthened. Sleep deprivation can have a major negative effect on learning and memory.

Teenagers do not get sleepy as early as they did when they were younger and therefore they tend to stay up later at night and sleep later in the morning. Most teenagers' brains aren't ready to wake up until 8 or 9 am. This has significant implications for the timing of the school day (refer to appendix A).

This section is significantly based on Eric Jensen's book 'Enriching the Brain'.

Dr Wolfe's work fitted well with that of Eric Jensen. Jensen's book 'Enriching the Brain' explores the questions of 'what is intelligence?' and 'can it be influenced?' In particular he focuses on enrichment which he defines as a positive biological response to a contrasting environment, in which measurable, synergistic, and global changes have occurred.

His work explains the science behind enrichment. He investigates the notions about being born smart and what effect the environment can have on a person's ability to learn. Sayings such as "The apple doesn't fall far from the tree", can rightly be challenged. The environment to which the "apple" is exposed is significantly influential. He argues very strongly that intelligence is not fixed and that the brain is a dynamic and changing organ.

Jensen examines genes and their role in some depth. The idea that genes are what your parents passed on to you and you're stuck with them is one of the main misconceptions of the fixed-brain myth.

Genes:

- Humans have about 25000 genes
- Genes are a unit of hereditary information carried on our chromosomes as DNA
- Genes have two functions:
 - to serve as a reliable template for making copies and
 - to serve as a transcription factor influencing proteins as gene expressions
- The second function is highly susceptible to environmental influences

From Figure 1.1 What are genes? from 'Enriching the Brain'

Gene expression is the process by which genetic information is translated into action. Genes provide blueprints and transcription factors for proteins. Both influence cell structure and functions. Cell functions can influence our behaviour. The old paradigm was that information flow only moved outward from genes to proteins. The new paradigm is that genes can be activated by everyday environmental signals.

In other words, genes influence our lives and our lives influence or genes. This has big implications for education. The transcription function of genes is susceptible to the environment. Alterations in what the organism considers "status quo" will influence the expression of genes by altering the message to proteins. The brain is very experience-dependent. Jensen refers to the process of changing experiences to develop a brain as enrichment.

Encouragingly, so-called slow learners benefit from enriched environments just as much or more as the so-called regular or gifted learners.

Factors such as stress, nutrition, exercise, social factors and trauma can influence gene expression.

The key to enrichment is contrast. The greater the contrast, the more the benefit.

Key factors that maximise the contrasting effects and hence contribute to enrichment are:

- physical activity (versus passivity)
- novel, challenging, and meaningful learning (versus doing what is already known)
- coherent complexity (versus boredom or chaos)
- managed stress levels (versus stressful conditions)
- social support (versus isolation)
- good nutrition (versus poor quality food)
- sufficient time (versus one-shot experiences)

Further distinctions emerged from the research about enrichment.

- It has global impact, not specific; it shows wide spread effects in the life of the subject
- It is generally age independent
- It is usually intelligence independent

The research also suggests that focused types of learning experiences such as skill building can benefit the brain. If the rest of the environment stays the same but the subject acquires a particular new skill that's new to the brain, the brain is still likely to change, but the changes will be narrow and less global.

The following variables are key for success in skill learning.

- attentional mind-set to the task (essential to pay fixed attention)
- low/moderate stress (must perceive some choice or control over the task)
- coherent, meaningful task (how to 'buy into the task')
- massed practice (60 – 90 minutes/day 3 – 5 times a week)
- learner – controlled feedback (subjects should be able to adjust the level and type of feedback)
- repetition of task (connections must be reinforced and strengthened or they deteriorate)

An increasing number of students in schools have individual education plans (IEP's). These plans are designed to meet the individual needs of the student, often due to a learning disorder. Jensen argues that all learning difficulties can be repaired to some degree. He lists three options, ignore (not a good idea), accommodate (help the student survive), or intervene (often either enrichment, hope or skill building efforts) students with special needs should have an IEP with a combination of accommodation and intervention that fits the needs diagnosed.

Jensen continues this concept by arguing that all students have special needs and are gifted in some way and hence it is not just students with learning disorders, or who are classified as gifted, that should have IEP's.

Jensen believes there is a need for paradigm shifts within schools.

OLD PARADIGM

one size fits all
at grade level for one year
graduate after sixteen years
pull out programmes
grade promotion
stressful grading

NEW PARADIGM

customised IEP's for all students
students move at own pace
graduate when curriculum is done
always in pullout enriched class
content-mastery promotion
mastery level achievement

These paradigm shifts have significant implications for schools. In effect Jensen is talking about the concept of personalised learning.

This section is significantly based on Julia Atkin's 'Teaching for Effective Learning' work.

Julia Atkin's integral learning concept made a strong connection with me when I first encountered it in 2002. The concept was largely based on Ned Hermann's metaphorical whole brain model. Based on a simplified anatomy of the brain a framework for designing learning experiences was developed. This framework influences the design of learning activities to enable students to experience a range of ways of thinking/learning not just their dominant or preferred way of thinking/learning.

Atkin leads to the Whole Brain Model by firstly exploring theories of learning. After considering over 200 000 responses to the request to share images of learning the dominant metaphors or analogies that arose were:

- journey
- growth
- construction – reconstruction (creation – recreation)
- transformation
- enlightenment
- empowerment
- enrichment

Atkin refers to the 'ways of knowing'. This is based on work by John Holt, specifically the chapter entitled 'The World's We Live In' in his book 'What Am I Doing Monday?'. Holt refers to the worlds we all live in. He says each of us has four such worlds. The first world is the world within our skin. The second world is the world the individual knows about from direct experience. The third world is the world the individual knows about, but has not experienced in any direct way through the senses. The fourth world is the infinite world of possibilities which the individual has not as yet heard of or even envisaged.

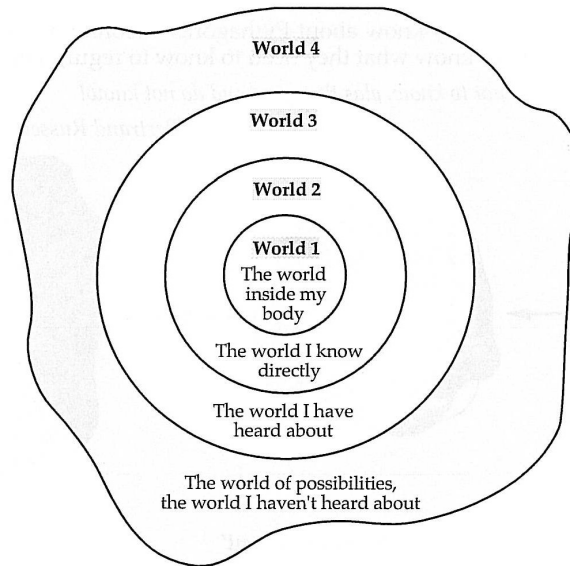


Figure 3
The worlds we live in
Teaching for effective learning, Julia Atkin 2007

Learning is about growing all these worlds. The natural process of learner driven learning is where our inner world is constantly developing from life experiences in our World 2 (in many ways this is the process of enrichment as described by Eric Jensen). As our World 2 grows or expands so too does our World 3. Hence the process of learning is transformative, coherent and integrated.

Atkin agrees with Holt's view that in most situations formal learning (such as traditional learning within high schools) does not mirror the natural learning that occurs in informal situations. For most learners formal learning fills up the World 3, the world they 'know about', but don't 'know'? Hence the students know about things but do not connect them to their own experiences.

Atkin makes reference to a quote from Bertrand Russell

"They work to pass and not to know, alas they pass and do not know!"

Atkin introduces Paul MacLean's (MacLean 1978) triune brain theory

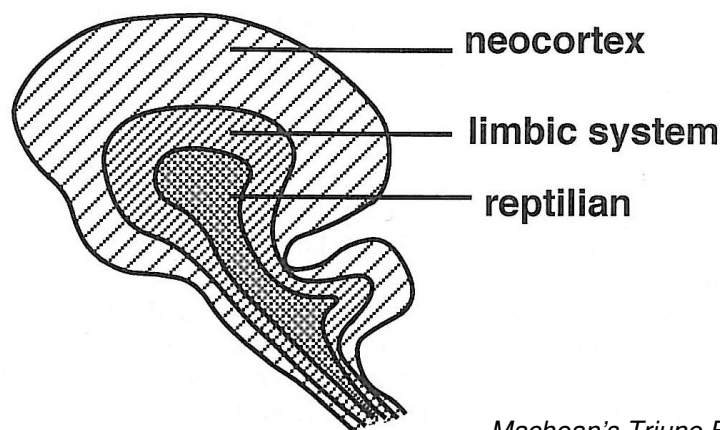


Figure 10
Machean's Triune Brain (Machean 1978)
Teaching for Effective Learning, Julia Atkin 2007

The theory is that the brain has three main evolutionary levels – the first level, the reptilian brain, is driven by instinct. The second level, the limbic system, is the emotional centre of the brain. The third level is the neocortex or cerebral cortex which is the abstract thinking centre of the brain.

The reptilian brain and the limbic system are thought to control the instinctive behaviours including the body's internal involuntary responses such as heartbeat and the flight or fight response to fear. The neocortex appears to be responsible for our more voluntary behaviour and capacity for thinking, speaking, and acting in a deliberate 'educated' way.

When we are under threat we revert to instinctive behaviour. For optimal learning we need to be challenged but not threatened.

For our ways of knowing inherent in each brain system to be integrated we must be open to learning at the emotional, sensory level.

Atkin constructed a checklist for conditions for effective learning:

- environment
 - physical
 - emotional
- motivation
- challenge
- feedback
- sense of achievement
- readiness to learn
- structuring of reflective process
- ownership – a degree of freedom for learning
- metacognition – learners' knowledge about how they learn

Sensory information storage is the short-lived holding of information – visual, auditory or kinaesthetic. However, short term memory can, on average, hold 7½ bits of information (other sources now believe it is as little as 4 - 5 bits). Information can be 'chunked' together to form 'bits' of information hence increasing the amount of information we remember. Memory is strengthened when more than one of the three sensory modes is used i.e. visualising what a number looks like when trying to remember it. Often we take in information in one sensory mode and transform it. For example, taking in visually how to hit a tennis ball and translating it into the kinaesthetic information to actually be able to do it. People appear to have preferences for both how they take in information and how they process it.

Long-term memory is stored in networks. We recall material which is unusual, unique or that which has a strong association with our experience or with something else we know. As the length of time devoted to a learning session increases the amount of material able to be recalled from the session decreases.

When planning learning sessions for maximum recall and understanding there are two opposing brain tendencies to deal with. Left brain processing of details for maximum recall and skill automation is best when learning sessions are planned as

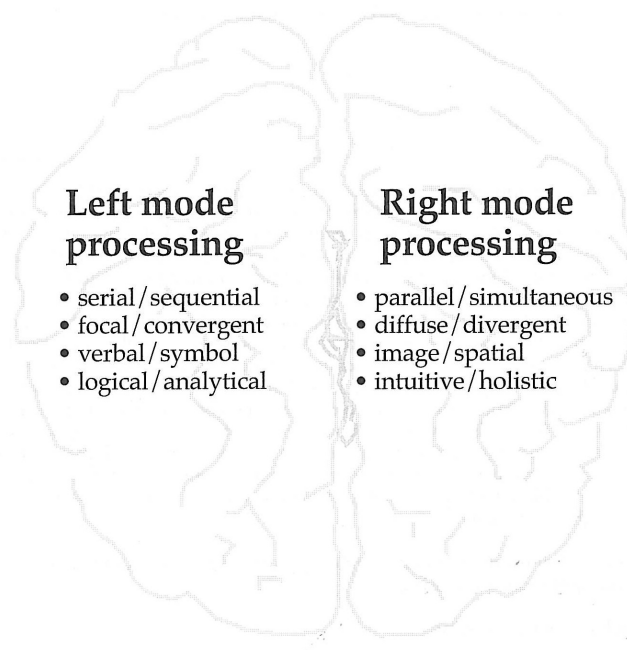
short concentrated sessions. Right brain processing requires that you 'get into' the material so that the patterns and interrelationships start to form – this takes time and immersion in the material. A compromise needs to be reached. Study periods for the purpose of understanding, and recalling information are suggested to be 20-40 minutes with a short break in between. The question for schools is when is it appropriate to build in such times. After a learning session 80% of details are lost unless it is reviewed within 24 hours (refer to Appendix B).

Learning styles were very much at the fore in educational circles during the 90's. Atkin believes in the need to find unity in the models – to draw out common elements and to show how a unified model helps us refine and make distinctions concerning our understanding of the general process of learning.

A simplified anatomy of the brain is that it has three levels (which can be further simplified to two levels) and two hemispheres.

The three evolution levels are the: neocortex/cerebral cortex - rational, conceptual; the limbic - emotional 'doing'; and the reptilian - basic memory, instinctive behaviour, automatic body control (refer to the previous Triune Brain diagram).

The brain has two different ways of processing information. Left mode (hemisphere) processing and right mode (hemisphere) processing.



*Figure 24
Right mode versus left mode processing
Teaching for Effective Learning, Julia Atkin 2007*

What the left side of the brain does best is; explaining words, remembering using language, step by step thinking, controlling emotions, taking life seriously, working

with facts, analysis, logical reasoning, practical tasks, structured activities and organisation.

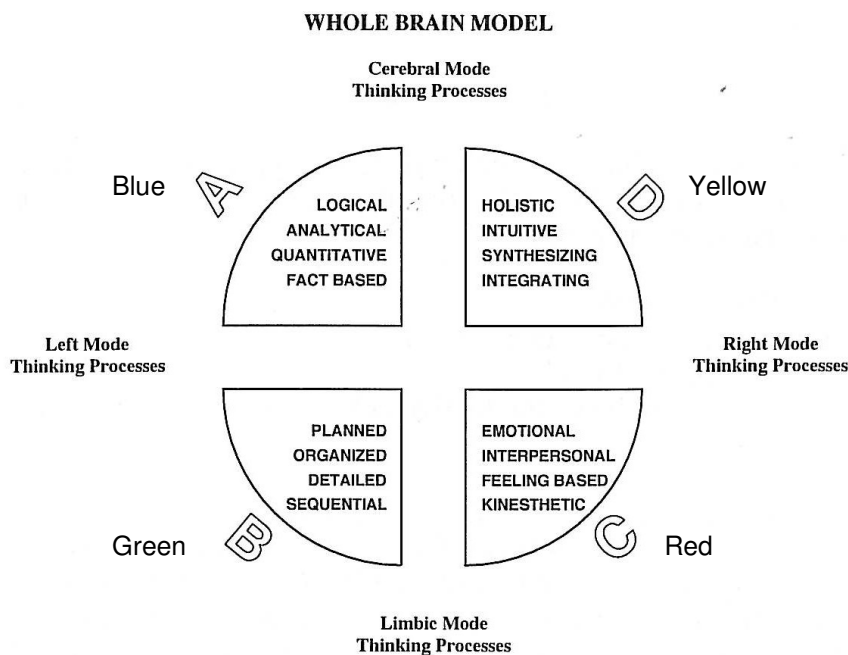
What the right side of the brain does best is; explaining visually, remembering using images, holistic thinking, expressing emotions, approaching life playfully, working with pictures, synthesis, intuitive, understanding design and people related tasks, fluid open activities, improvisation.

Effective learning requires the ability to use both types of processing in isolation and in tandem.

Just as people have a dominant hand or eye we also have a brain dominance which is a preferred way of thinking.

By combining what is known about the brain in terms of the levels and in terms of the two hemispheres a model of brain processing can be formed. This model is Ned Herrmann's Whole Brain Model from his book 'The Creative Brain' 1989.

By combining the left and right hemispheres/modes of processing and the limbic system and neocortex/cerebral cortex a four quadrant model is formed. Herrmann uses this as a metaphor for how the brain processes information.



Source: Herrmann 1989: Appendix E

Figure 26

Herrmann's Whole Brain Model – A metaphorical model
Teaching for Effective Learning, Julia Atkin 2007

Herrmann has developed a process to determine your brain domination pattern, the Herrmann Brain Dominance Instrument (HBDI).

Having completed the process myself I have experienced first hand the benefit of understanding my own preferred ways of thinking. It helps identify areas you need to make a more conscious effort in as a teacher, a leader, and a learner.

The process also gives you an understanding of how others prefer to think. This has many benefits when working with students and other staff.

In the classroom understanding your students dominant ways of thinking can be used to great advantage when grouping students as well as when developing a learning plan for each student.

Atkin has used this model and 'the ways of knowing' to develop a method of designing learning experiences so that deep understanding occurs. It is Atkin's contention that regardless of preferred processing style, learning occurs most readily and most effectively when whole brain processing is engaged. Such learning also requires the process of experience, reflection on experience so that a 'pattern' or framework allows the learner to grasp meaning of the learning and finally learning moves onto the facility to use language, rules, laws, principles for accuracy and efficiency in thinking, doing and further learning.

Atkin argues that the best learning occurs when we stimulate and integrate all our ways of knowing, she calls this integral learning. This approach is different from the common approach of simply varying strategies of teaching to eventually 'reach' every student.

Atkin has developed a learning experience/strategy design template to help the process of integral learning.

COLLATION OF NEW ZEALAND MATERIAL

To 'get' the concept of student centred learning, I reviewed recent resources released in New Zealand school education, specifically; Students First (Secondary Futures), Making a Bigger Difference (Schooling Strategy 2005 – 2010), the Draft New Zealand Curriculum and the booklet Let's Talk About Personalising Learning.

Students First

The Students First document has the view that schooling within New Zealand needs to develop for the future. However, it recognises that the best of what is happening within schools now could form the basis for future schooling. There are three key aspects to the Students First theme.

- Future outcomes

Future learning outcomes were identified where students have the capacity to learn

- to participate in a future society
- to be part of the New Zealand's traditions
- to value self and others

In my view looking at the desired 'end product' from schools and in effect working backwards to design how to get there is a sensible process. Of course our school leavers, the 'end product', will be very diverse. However, the sense of being, the skills to learn, and the understanding of values are fundamental to all.

- Learning experiences

Within the aspect of future learning experiences four trajectories were formed to reflect trends in education.

- customised pathways
- linked-up learning programmes
- multiple learning portals
- synchronised learning platforms

Customised pathways reflect a shift from education as a compulsory requirement to one that builds on individual interest and enthusiasm and personal aspirations. A customised pathway provides scope to include services beyond those in a traditional school setting. The pathway would be co-constructed by the teacher, student and family. This partnership works well when a teacher's experience and knowledge combines with the student's goals and aspirations. A challenge for a significant proportion of our population is to create both aspirations and a realisation of what is possible.

Linked-up learning programmes is simply having access to a range of learning programmes. Multicentre learning could contribute strongly to customised programmes.

Multiple learning portals. Apart from the classroom teaching, other formal and informal portals to learning will increase students' choice and opportunity. Schools will play an increasingly important part in helping students to integrate and process multiple information streams. Face-to-face learning will be complemented and in some cases may be even replaced by e-learning.

Synchronised learning platforms recognise that learning is not the sole prerogative of secondary schools. Schooling needs to be responsive to communities and contribute to a synchronized community-based approach to education. Schools could be part of a network and provide links to social and health services to students and their families.

- Paradigm shifts

Are required to move to a futures view of schooling. Customised pathways will require a shift from classroom conformity. More collegial relationships will be required between centres of learning so that 'students first' rather than institutional priorities can be the driving force. Synchronised learning platforms will demand a breakdown of site attitudes to education. School and community leaders will need to take up the challenge of thinking and acting differently.

The paradigm shifts for learning experiences are illustrated in the following table.

Trajectory:	From:	Towards:
Customised Learning Pathways	Classroom conformity	Individual learning plans
Linked-up Learning Programmes	Loyalty to institutions	Loyalty to learners
Multiple Learning Portals	Knowledge transfer	Information management
Synchronised Learning Platforms	Fragmented silo-based learning	Coherent community-based learning

*From Table 2
Paradigm Shifts 2006 (Students First – Secondary Futures)*

School Strategy 2005-2010 – Making a Bigger Difference.

This strategy has the goal of 'all students achieving their potential'. Achieving this goal will mean significantly improving opportunities and outcomes for students.

The strategy has three priorities:

- all students experiencing effective teaching
- children's learning is mentored by families and whanau
- evidence-based practices are used by all involved in schooling

These priorities all seem to relate to personalised learning, in particular the effective teaching priority.

The crucial task identified for teachers is that of meeting the needs of diverse students simultaneously so that all students succeed.

Effective teachers are said to combine effective teaching practice with student achievement information. The effective teaching practice is evidence based and the assessment not only provides feedback but it also provides the 'where to from here' for the students. There need to be demonstrable gains in learning and achievement.

There is an emphasis on careful task and activity design and management which builds a challenging, caring and inclusive learning community. The teacher provides support which 'scaffolds' the student from what they know now to the next step in the learning. Teachers facilitate students to reflect on their own thinking and learning and facilitate reciprocal taukana – teina roles (give and receive assistance). Effective teaching recognizes prior learning and builds on relevant out of school experience. In particular this could include cultural experience.

The process of further developing effective teachers requires both commitment and support to enable continuous improvement. Obviously professional development of teachers is vitally important however teachers must view themselves as professional learners. I believe teachers also require specific support to engage with families and whanau and involve them in the learning process.

The New Zealand Curriculum – Draft for Consultation 2006

As well as defining the content and skills of the curriculum this document encouragingly contains sections on effective pedagogy, designing a school curriculum, planning with a focus on outcomes, planning for the development of key competencies and planning for purposeful assessment. For the first time there is also a clear progression of curriculum from early childhood through to tertiary education.

The effective pedagogy section identifies the challenge for teachers to respond to the needs of individuals while ensuring that their other students are constructively engaged in learning.

There is a broad reference to 'current research' which shows that students learn best when teachers:

- encourage reflective thought and actions
- make connections
- provide multiple opportunities to learn
- facilitate shared learning
- enhance the relevance of new learning
- create a supportive learning environment

Reflective thought and action helps develop creativity, an ability to think critically, and an ability to think about your own thinking. Making connections is being able to integrate new learning with what you already understand. Multiple opportunities encompasses the provision of suitable time and opportunity to engage with, practise, and transfer new learning. Shared learning involves shared activities and conversations, and developing learning partnerships. Enhancing the relevance of new learning is about quality design of learning experience to stimulate curiosity and

learning is inseparable from its social and cultural context. A positive, supportive, caring and inclusive environment needs to be created.

e-learning is also referred to. The use of ICT to not only supplement traditional ways of teaching but also to open up new and different ways of learning is encouraged. The planning section encourages schools to either link or integrate the curriculum areas. 'Different schools will organise the learning programmes in different ways. Some will organise them in ways that integrate understanding, key competencies, and values across a number of learning areas. Others will organise them by learning areas but look for opportunities to link across the boundaries between these areas.'

A thematic approach is encouraged. Themes such as sustainability, citizenship, enterprise, globalisation and critical literacy are promoted as possible frameworks for integration.

The statements about planning for outcomes are included to provide direction for curriculum design. Each student's ultimate learning success is more important than the covering of particular achievement objectives. The responsibility rests with teachers and principals to be able to articulate what the priorities are for the students and how the curriculum is designed to achieve this.

The need for purposeful assessment is promoted. The purpose is clearly to improve students' 'learning' and the teaching process. The following characteristics of effective assessment are identified:

- it benefits students
- it involves students
- it supports teaching and learning goals
- it's planned and communicated
- it's suited to purpose
- it's valid and fair

The key competencies have evolved from the essential skills of the original curriculum document. The competencies apply broadly across all curriculum areas and are most often used in combination. The importance of skills rather than simply content knowledge is well articulated in the document.

Let's Talk about Personalising Learning

This resource is obviously focused on exploring the concept of personalised learning. It explores the concept in a broad sense. The Minister of Education's introduction defines personalised learning as a way of describing the shifts that are happening in our education system as we respond to the new meaning of knowledge in the 21st century.

Components of personalised learning are identified as: effective teaching (a priority of the school strategy); assessment for learning – having an in-depth knowledge of the student; curriculum – referring to the new draft curriculum as both setting the

direction for what will be taught and allowing opportunities to build teaching around the needs of individual students; strong engaged communities – a partnership between home and school; professional leadership – emphasizing the need to lead the creation of conditions for personalised learning; and highly supportive system – the role of the Ministry to help schools build capacity to meet the needs of the students.

Personalised learning is considered from the view of students, families/whanau and teachers:

Students

- have high expectations and control/input into learning
- learn how to learn
- identify next steps

Family/Whanau

- involved in learning partnerships with students and schools
- informed of learning process and what support they can provide
- involved in planning and supporting learning pathways.

Teachers

- appreciate all students can learn and have high expectations
- use assessment to inform future learning
- design tasks to support individual and group learning
- create learning community where students support each other's learning
- develop a wide range of strategies, including using new techniques

SCHOOL VISITS

When visiting the schools I was particularly interested in any school-wide practices, learning structures, or programmes that facilitated a student centred approach.

All schools had a range of unique features and had something to offer.

- **Golden Grove High School, Adelaide**

The equivalent of a New Zealand Year 9 -13 school. Coeducational. Performing Arts focus.

The school was situated on a larger site adjacent to integrated coeducational Catholic and Anglican schools. The three schools shared some key facilities such as, an auditorium, gymnasium, and senior library. The senior year levels (year 12 and 13) of the schools shared common timetables and classes were mixed. It was an interesting sight seeing students in three different uniforms within one class.

The three schools opened in the late 1980's. Golden Grove High School had been designed to transform into a retirement village in the future.

A feature of the high school curriculum was a very structured thinking (HOT - higher order thinking) programme.

- **Windsor Gardens Vocational College, Adelaide**

The equivalent of a New Zealand Year 9 -13 school. Coeducational. Vocational focus.

A focus of this school was that each Thursday the Year 13 students studied at home and all Year 12 students studied an academy type vocational programme such as business, catering, construction etc. A 'Twilight School' also operated on the school site between 3 – 5 pm for students disengaged from mainstream education. A feature of this school was also its extensive range of community and business partnerships.

- **Fremont Elizabeth City High School, Elizabeth City, Adelaide**

The equivalent of a New Zealand Year 9 – 13 school. Coeducational. Music focus. In effect the school was formed from a three way merger of schools. The school was situated in a low socioeconomic area. There were a number of similarities to the context of Aurora College. The school operated two aboriginal homeroom classes. There was an emphasis on developing the social and interpersonal skills of the students through an integrated studies programme.

The school had previously participated in the South Australia learning to learn programme with a focus on the 4Mat learning model. The original attraction of

this school to me was the 4Mat model which is very similar to the Atkin/Hermann whole brain model.

- **Bridgewater Primary School, Bridgewater, Adelaide**

The equivalent of a New Zealand Year 0 – 8 primary school. Coeducational. This school had also participated in the South Australia learning to learn programme. The school had developed through this project to become based around student centred learning. There had been strong influences from Julia Atkin, Julie Boyd, Bill Spady, Richard Baiden as well as Eric Jensen. Mathematics and English were explicitly taught to students in appropriate ability groupings. All other learning was enquiry based. The Principal of this school introduced me to a poignant poem by John Edwards entitled “The things we steal from Children” (refer to Appendix C).

- **Australian Science And Mathematics School, Adelaide**

A senior secondary school equivalent to New Zealand’s Years 12 and 13. Coeducational. Based within the campus of Flinders University. This school obviously had a focus of mathematics and science. All learning was done through either a scientific or mathematical lens. Students spent considerable time on personal projects.

- **North East Adelaide Department Of Education And Children’s Services**

Because one of my contacts was a Transition broker I was able to gain insight into a range of careers and transition initiatives operating in South Australia. In particular vocational education and training programmes (VET) courses and Northern Futures which was an incorporated society which builds partnerships between businesses, community and schools in the Northern Adelaide region. I also attended a ‘parents as career partners’ seminar at Marden Senior College and Open Access Centre.

- **Chevallum State School, Sunshine Coast, Brisbane**

The equivalent of a New Zealand Year 0 to 8 primary school. Coeducational. This school had also worked with Julia Atkin. It was an original pilot school in the Queensland New Basics project. There were a number of features of interest within this school. Students were grouped within 3 multi year level bands within the school. Two teachers shared a class/group of students. Students participated in structured play. This visit enabled me to focus on rich tasks. I was also able to participate in the selection of completed rich tasks to be sent away for moderation. Learning was a combination of explicit teaching and integrated rich tasks. There was a strong influence from “Habits of Mind” within the school.

- **Calamvale Community College, Brisbane**

The equivalent of a New Zealand Year 0 – 13 school. Coeducational. This was a new school established in 2002. It was, in effect, comprised of 3 schools, years 0 – 6, years 7 – 9, and years 10 – 12 (13).

The middle school operated multilevel (Year 7 – 9) pods of students of approximately 100 students with four teachers. Students were regrouped in a variety of ways within the PODs. Numeracy and literacy were explicitly taught, most other teaching and learning was from an integrated approach which had evolved from New Basics projects. Year 10 acted as a transition to senior school. The curriculum was ‘packaged’ as thematic topics/courses. The senior school had a strong emphasis on multiple pathways.

Some points of note:

When reflecting on the visits to all seven schools some key aspects of student centred approaches to learning stood out.

The implicit and explicit ‘teaching of thinking skills’ was very evident in the majority of schools. One approach was to explicitly teach the skills within certain subject areas and purposeful apply them within other designated subject areas. One school focussed on, Bloom’s Taxonomy, De Bono 6 Hats, Caring, Creative Thinking, Critical Thinking, Gardiner’s Multiple Intelligences and graphic organisers. These were specifically taught and applied within Years 7 – 9. Another school focused solely on Gardiner’s 16 Habits of Mind across the school’s curriculum.

The thinking skills programmes served two purposes. They provided a range of skills or tools for the students to apply within their learning. They also created a strong focus on students understanding their own learning processes and preferences.

A number of schools had developed ‘careers teaching and planning’ within their curriculum. There seem to be clear synergies between a personalised approach to learning and the development of a more individualised approach to career planning. In some ways this also seems a little contradictory as today’s students can expect to typically have several career changes. However, the identification of individual student strengths, preference and also knowledge/skill gaps in understanding can inform the planning of learning pathways. In South Australia the completion of careers units will be a requirement for the first level of their new school qualifications. This will be a similar requirement to the literacy and numeracy requirements of level 1 NCEA.

The academy programmes at Windsor Gardens Vocational College provided excellent real life learning experiences for students.

For a day each week all Year 12 students studied an academy programme. Programmes such as operating business, catering, construction and IT ran for the full day. Each programme had significant business or community partnerships. Much of the equipment was supplied by industry. This learning was very authentic.

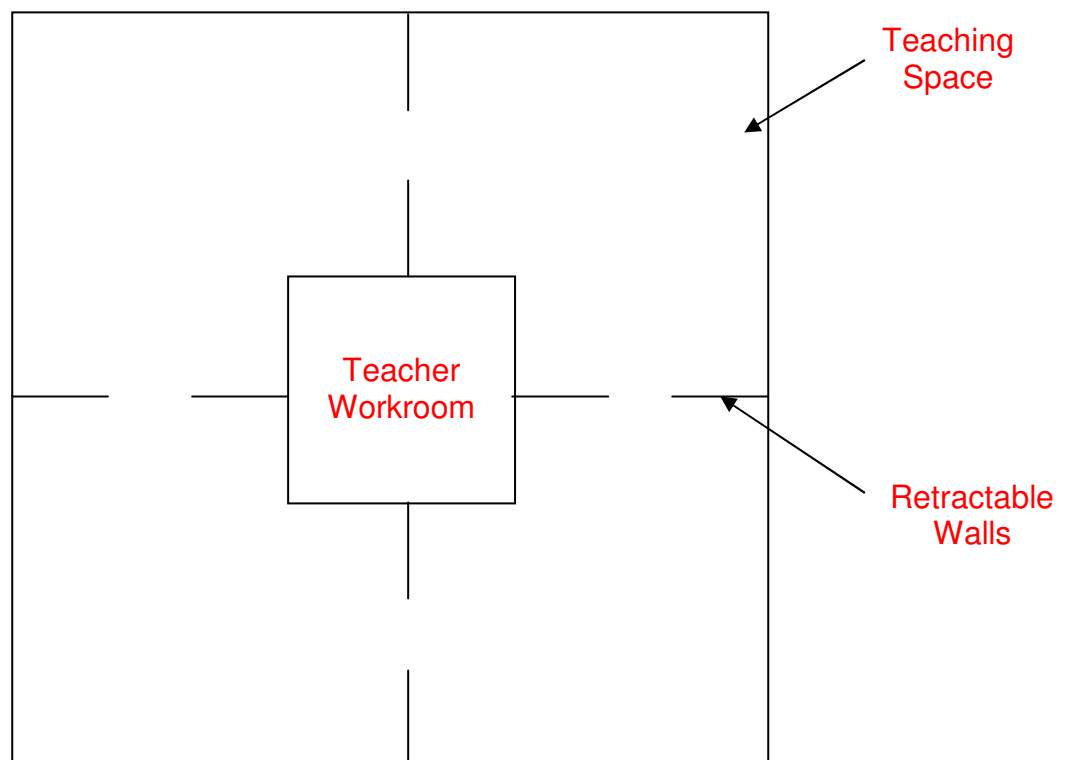
For example, the catering course ran a functioning restaurant, the construction course was building prefabricated sheds and the business course was participating in a virtual nationwide business game. Students who had strong academic focuses attended courses at University during these days. To enable the senior timetable to function all the Year 13 students studied at home or in work placements while the academies were functioning.

Multiple age grouping of learners existed in both the primary schools that I visited. Both schools were sufficiently large not to need to do this for staffing reasons. One secondary school also combined its Year 7 to 9 students. Historically it would seem that most primary schools in New Zealand and Australia had a multi age level approach to teaching prior to World War 2. The post war baby boom perhaps forced a more structured age level approach.

The benefits of mixing age levels appears to be two-fold. Firstly it allows for the role of the student as a teacher to be enhanced. It also allows for increased opportunity for ability groupings. A long term benefit may also be the strengthening of school culture as students indoctrinate each year's new entrants into an existing learning culture.

The concepts of team teaching and the regrouping students for different learning were also very evident. In the primary and junior secondary year levels two teachers often taught groups of about 50 students. At times they were taught as one group but most often as two distinct groups that were regularly reconstituted.

The pods of approximately 100 students appeared to work well at Calamvale High School. Large teaching spaces with four retractable walls had been specifically designed to allow the four homeroom teachers to work both individually and together in a variety of ways.

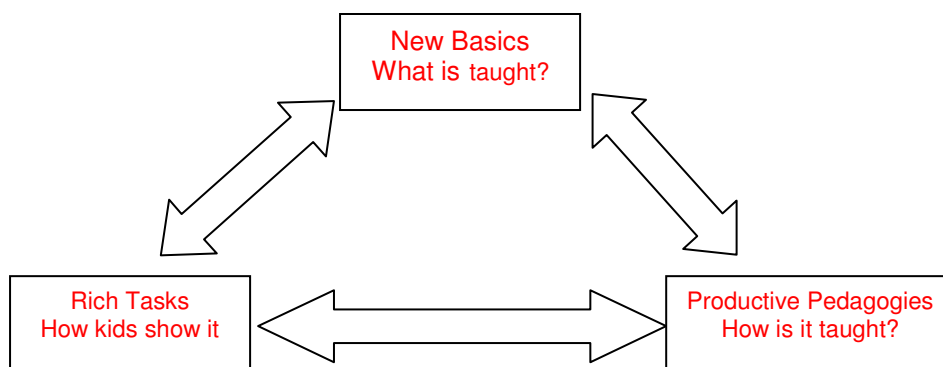


Potentially a wide range of ways of grouping students could be utilised e.g. ability, learning preference (a purposeful mix within a group), age, experiences etc.

Prior to heading to Queensland I had researched the New Basics project. The New Basics are described as clusters or groups of practices that are essential for survival in the worlds that students have to deal with. There are four clusters:

- Life pathways and social futures
Who am I and where am I going?
- Multiliteracies and communications media
How do I make sense of and communicate with the world?
- Active citizenship
What are my rights and responsibilities in communities, cultures and economies?
- Environments and technologies
How do I describe, analyse and shape the world around me?

The New Basics include Rich Tasks and Productive Pedagogies



The New Basics go up to Year 10. The two Queensland schools I visited were both involved in the New Basics trial.

The concept of the Rich Tasks appeared to work well. They provided authentic meaningful learning for students which was connected to the world(s). The assessment and moderation of the assessment appeared a little problematic.

There was an emphasis on a transdisciplinary approach which is intended to retain the integrity and intellectual rigour of each subject discipline. Transdisciplinary was identified as being distinct from a more traditional interdisciplinary which often linked disciplines typically through a thematic approach.

Calamvale's approach to learning in the middle school years had evolved from the original New Basics concept. Larger projects which had a strong connection to the world of the students remained as a key component of their learning.

While some schools had very 'free' organization of curriculum other schools had retained a more traditional approach to the delivery of distinct subjects.

Some schools had grouped subjects together and renamed them. Some groupings used were, creative industries and enterprise, discovery and technology, and performance.

Most schools retained distinct and traditional pathways within their senior school.

Perhaps all these approaches have a place within schools, especially at the different levels of a Year 7 to 13 school.

CONCLUSIONS

IDEAS FOR NEXT STEPS

The combination of brain based learning, understanding the concept of personalised learning and some examples of best practice have lead me to create a list of key points or big ideas.

These 'big ideas' will hopefully serve as a starting point for the further development of our curriculum plan and facilitate a more student centred approach to learning within our school.

- All staff must genuinely believe that they can make a very real and lasting difference to the students. No matter what the background or ability of the student, success can be achieved.

Teachers need to have an understanding of the adolescent/teenage brain and how it develops. In particular they need to know it is not too late to enhance learning by the time students get to high school.

The concept of activating a person's genes by environmental signals needs to be understood. There also needs to be an understanding of the contrasting effects which contribute to enrichment.

These understandings can form the basis for future staff professional development.

- Students need to have more input into the design of learning experiences. For meaningful learning to occur it needs to be novel and challenging. Learning based on complete student choice lies at one end of a continuum with perhaps the traditional classroom experience at the other. Somewhere within that continuum is an approach suitable to most school environments. My thoughts which are particularly focused at the year 7 – 9 homeroom situation are:
 - The explicit teaching of numeracy and literacy in ability groups (with reference to Jensen's skill building strategies and Atkin's memory strategies)
 - The implicit and explicit teaching interpersonal and thinking skills
 - Thematic integrated tasks featuring as a significant proportion of student learning. Tasks would be a mix of interdisciplinary and transdisciplinary. The tasks vary in length, vary as individual or group tasks, and the student groupings are often changed.
 - Students are able to choose topics/approaches within a range of possibilities which allow for meaning and connectedness with the real world.
 - Tasks are able to vary in complexity.

- Consideration needs to be given to some key factors when designing school timetables.
 - allowing for team planning time for teachers
 - focuses on Mathematics and English in the junior school
- An individual plan/portfolio is achievable for every student. This could be one complex document or a series of more individualised documents ideally recorded electronically. The IEP could include:
 - planning for next learning steps based on assessment information
 - records of all achievement
 - learning profile and preferences
 - physical and nutritional goals
 - learning goals
 - career goals / planning
 - family/whanau goals – input into learning

The design of the portfolio would also contribute to the defining of the role of a student mentor. Plans/portfolios would be living documents. The traditional concept of school reports could be 'absorbed' within this process.

- A range of thinking skills need to explicitly be taught to students. However, most importantly they need to be applied in a range of contexts. The implicit teaching of the skills will also ultimately facilitate the student to apply them as part of their own self-directed learning.

Thinking skills such as Gardiner's Habits of Mind and Bloom's Taxonomy, graphic organisers etc have a significant role in learning programmes.

In some situations the key competencies from the curriculum require explicit instruction and often a programme of social skill learning is a fundamental requirement. Good social skills are required for most school learning.

- Students need to be taught how to understand themselves as learners. More than any other group adolescents and teenagers need to understand their own brain development. Students must benefit by understanding the changes that are occurring in their brains and for example the dominance of emotions. Understanding learning preferences of themselves and others will also contribute to better learning. Such information could contribute to an IEP.
- The inclusion of regular physical activity to enrich learning. Clearly this also has health benefits. The science linking physical activity and nutrition to improved learning gives a compelling reason to review what happens in schools.
- The benefits of multi age grouping are worthy of serious consideration. Multilevel study in the senior years at secondary school has become increasingly the norm. This allows students to be studying at an appropriate level. This flexibility often hasn't existed in the junior years. However, the

benefits of multi-age learning go beyond just ability groupings. Students teaching others create powerful reciprocal learning for all involved.

Multi-age learning groups might also help the effectiveness of vertical pastoral grouping commonly used within secondary schools.

Multi-age junior homeroom classes might also create a more natural family/whanau environment which strengthens the learning culture – “This is the way we have to do things here”.

- Strong relationships within a school are so vital I feel their specific mention is important.

Quality relationships are fundamental to all the other points which emphasise the need to know your students well. The use of an individual learning planning/portfolio which has teacher, student and family/whanau input allows for structure to be given to the formation of a meaningful partnership. The importance of teacher role-modelling of relationships is important. Team teaching helps role-model cooperative adult relationships for students who do not otherwise encounter this. Teacher passion is also vital to help engage students who have little experience of the excitement of learning.

- Schools have an increasing role to play in facilitating social and health support for students and families. This situation may not be desirable in the eyes of many but it is a reality. By providing links to other appropriate community based resources student learning can be supported. This individualised support will undoubtedly lead to better outcomes.
- There is an increasing range of valid pathways for students at school. In particular vocational pathways can be aligned with business and community groups. The involvement of business and other community-based groups in school should be encouraged. Student learning in other environments creates meaning. Collaboration between schools can also work effectively. e-learning also requires encouragement and support as a valid pathway for students. Such learning requires specific skills which require specific teaching.
- Learning environments within schools require development to facilitate a more student centred approach. Creating spaces conducive to learning which consider such things as lighting, ventilation and space are important. However, a particular focus for development needs to be the creation of flexible spaces. The spaces need to allow for a variety of student groups and team teaching.
- The design of learning experiences for students needs to be based on sound learning principles. Experiences which require a range of thinking and processing styles need to be scaffolded for students. Student input into the design can also recognise prior learning, create meaning and allow for the inclusion of cultural contexts. Models such as the whole brain model facilitate deeper understanding, particularly when combined with a good knowledge of the students’ learning preferences.

APPENDIX A

Dr Wolfe refers to information from the National Sleep Foundation which can help teenagers cope if the option of changing the nature of the school day is too difficult.

- Stay away from caffeine and nicotine after noon. Avoid alcohol which can disrupt sleep.
- Heavy studying or computer games before bed are arousing, as is trying to sleep with a computer or television flickering in the room.
- Avoid bright light in the evening, but open blinds or turn on lights in the morning.
- Sleeping more than 2 or 3 hours later in the weekend can disrupt the body clock.

APPENDIX B

Following a 1 hour learning session the following revision schedule is suggested by Atkin for maximum recall

Ideally, for maximum recall of detail a **revision schedule** would be:

Following a 1 hour learning session

10 minutes later	-	review for 5 minutes	-	include self test
1 day later	-	review for 5 minutes	-	include self test
1 week later	-	review for 2-3 minutes	-	include self test
1 month later	-	review for 2-3 minutes	-	include self test
6 months later	-	review for 2-3 minutes	-	include self test

Such a pattern could be used to structure learning in areas such as numeracy as well as inform a learner's own personalised schedule of revision.

APPENDIX C

The Things We Steal From Children

By Dr John Edwards

*If I am always the one to think of where to go next.
If where we go is always the decision of the curriculum or my curiosity and not
theirs,*

*If motivation is mine,
If I always decide on the topic to be studied, the title of the story,
the problem to be worked on,
If I am always the one who has reviewed their work and decided what they
need,*

How will they ever know how to begin?

*If I am the one who is always monitoring progress.
If I set the pace of all working discussions,
If I always look ahead, foresee problems and endeavour to eliminate them,
If I swoop in and save them from cognitive conflict,
If I never allow them to feel and use the energy from confusion and frustration,
If things are always broken into short working periods,
If myself and others are allowed to break into their concentration,
If bells and I are always in control of the pace and flow of work,*

How will they learn to continue their own work?

*If all the marking and editing is done by me,
If the selection of which work is to be published or evaluated is made by me,
If what is valued and valuable is always decided by external sources or by me,
If there is no forum to discuss what delights them in their task, what is
working,*

*what is not working, what they plan to do about it,
If they have not learned a language of self-assessment,
If ways of communicating their work are always controlled by me,
If our assessments are mainly summative rather than formative,
If they do not plan their way forward to further action,
How will they find ownership, direction and delight in what they do?*

*If I speak of individuals but present learning as if they are all the same,
If I am never seen to reflect and reflection time is never provided,
If we never speak together about reflection and thinking and*

*never develop a vocabulary for such discussion,
If we do not take opportunities to think about our thinking,
If I constantly set them exercises that do not
intellectually challenge them,
If I set up learning environments that interfere
with them learning from their own actions,
If I give them recipes to follow,
If I only expect the one right conclusion,
If I signify that there are always right and wrong answers,
If I never let them persevere with something
really difficult which they cannot master,
If I make all work serious work and discourage playfulness,
If there is no time to explore,
If I lock them into adult time constraints too early,
How will they get to know themselves as a thinker?*

*If they never get to help anyone else,
If we force them to always work and play with children of the same age,
If I do not teach them the skills of working co-operatively,
If collaboration can be seen as cheating,
If all classroom activities are based on competitiveness,
If everything is seen to be for marks,
How will they learn to work with others?*

*For if they...
have never experienced being challenged in a safe environment,
have had all of their creative thoughts explained away,
are unaware what catches their interest and how
then to have confidence in that interest,
have never followed something they are passionate about
to a satisfying conclusion,
have not clarified the way they sabotage their own learning,
are afraid to seek help and do not know who or how to ask,
have not experienced overcoming their own inertia,
are paralysed by the need to know everything before writing or acting,
have never got bogged down,
have never failed,
have always played it safe,
how will they ever know who they are?*

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