Sabbatical Report

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Term 3 2009

Inquiry Learning, Thinking Skills and e-Learning

Acknowledgements

So many people have assisted me with this learning journey which was to:

"*To improve the thinking skills of the students of Gordonton School through researching the theories and exploring schools that have developed thinking skills as part of their inquiry model. Also to explore the relationship that elearning plays in this process.*"

I would like to thank the Board of Trustees of Gordonton School for their overwhelming encouragement and support accorded me. Also to the management and staff of our school who continued to keep everything ticking over beautifully in my absence.

To Jeremy Kedian at the Leadership Centre of Waikato University who challenges my thinking on leading and learning and giving the sabbatical some direction.

To the principals and staff of the 14 schools from Whangarei, Auckland, Tauranga, Palmerston North, Hamilton Opunake, Oakura and New Plymouth who allowed me time to visit and talk with them and their staff. Also to the principals in and around Nottingham England, whose school I visited; thanks for including me in your hectic daily schedules. I learned so much.

To Bruce Hammonds who gave me three days of his time and kept hammering home the importance of inquiry in all aspects of teaching and learning. Bruce is one of those rare people who against all tides stand up firmly for his convictions. I sincerely thank you Bruce – education in New Zealand needs more people like you to keep us focussed on student learning and not the bureaucratic nonsense that takes our eyes off the ball.

Sabbatical Intention

The intention of the sabbatical was to ultimately improve the thinking skills of the students of Gordonton School through developing an inquiry learning model that can be used school wide. Along side this was to see how e-learning complements this.

As a school there was a desire to embrace an inquiry model to ensure that our students have the necessary skills to become *confident, connected, actively involved life long learners*.

Following an authentic learning topic undertaken (Working as a Team – to collectively achieve what you could not do on your own) by a Year 7/8 teacher in 2008, it became obvious to me that such an approach could and should be

developed school wide. The students set out to develop a restaurant from scratch – finding out what was involved, the jobs, the team work etc, culminating in an evening for parents and staff. I was totally impressed and the students gained an amazing amount of knowledge and skills.

The sabbatical then was to develop a school wide inquiry model along side sound e-Learning practices that would include a variety of thinking skills to improve student achievement and learning- ultimately was to develop a love of learning.

Background to Sabbatical

Since 2007 our school has been involved with an ICT Contract based around a number of schools in the north eastern end of Hamilton City. We have been exposed to professional development both with regard thinking skills and e-learning.

Staff has been introduced to Blooms Taxonomy, Solo Taxonomy, Habits of Mind, Thinking Hats and a wide variety of e-learning skills. They have used these tools collectively and individually and examples are evident in most classrooms.

What has been missing was an inquiry model to link the two together and having a whole school approach to learning.

In April 2009 as part of our *new curriculum* development, we invited Bruce Hammonds to facilitate a teacher only day and through the fun and frivolity of the day was a very important message. Bruce made it clear that we need to re-imagine everything, and used ideas from Tom Peters to support this:

> *"Schools could not have been better organised to destroy the talents of students."*
> *"Our schools are products of an industrial age mindset – along the lines of factories based on standardisation."*

"To save our youth and our planet will require the death of education and its rebirth."

What became obvious was that so much of what we do in schools we have done before and over time we modify our good practice to extinction and forget how dynamic and worthwhile these programmes and ideas were. This could be because the urgent overrides the important. The only way to counter this is, if it is important enough and believed by all, to have total school wide ownership of the idea and embedding it into all classroom practice. The idea of an abandonment officer at schools is a great concept - where nothing new is introduced unless something already being undertaken at the school is removed.

During Term 2 of 2009 I made contact with a number of schools who were much further down the track of inquiry learning and e-learning than we were and made arrangements to visit them.

To begin the sabbatical process I arranged to meet with Jeremy Kedian day one, and we talked through inquiry research ideas. Jeremy provided references both internet and hard copy for me to get started. For two weeks I read and re-read the theories and thinking models to try and come up with a clear understanding of the processes and skills involved in my own head
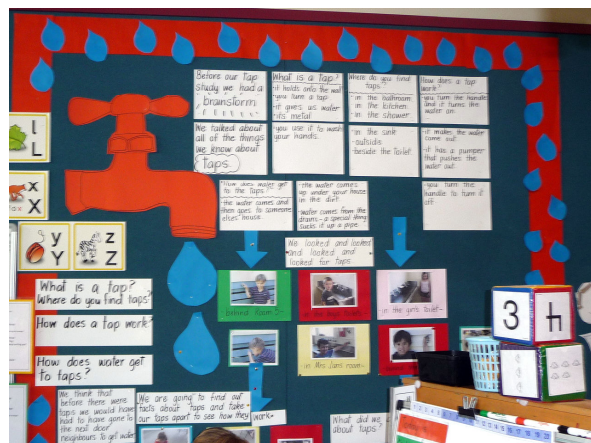
During the third and fourth week of the sabbatical I visited 14 school throughout the North Island. Then in response to an invitation by Jeremy, during weeks nine and ten I accompanied him and a group of 6 other New Zealand Principals to Nottingham England. This was to look specifically at the inquiry learning process as it is applied in this part of the United Kingdom and also to visit Djanogly City Academy an e-learning school for Year 7-10 students.

Resource Questions

Following the reading and research the following questions were constructed and were asked of principals and lead teachers. They formed much of the findings of this report.

- ❑ *What is effective thinking at your school?*
- ❑ *Can you define the basic thinking skills at your school?*
- ❑ *How and why did you choose the thinking skills that you use?*
- ❑ *Without the ability to ask relevant and probing question the thinking itself would cease to be effective. What stimulates thinking at your school?*
- ❑ *How do teachers at your school facilitate thinking in their classrooms?*
- ❑ *If questions are the heart of inquiry how do we place students in situations where they want to ask questions?*
- ❑ *Inquiry Learning*
- ❑ *What is your understanding of the inquiry learning process?*

- *What was your purpose in implementing inquiry learning as a class/school wide approach?*
- *Inquiry needs something worth inquiring. Who decides - Teacher directed or student directed inquiry?*
- *The use of inquiry across a typical day. What will I see in classrooms regarding inquiry learning?*
- *How much of a students/teachers day is involved with inquiry learning?*
- *What role does ICT play in this process?*
- *Has inquiry learning and ICT enhanced student learning, and how do you know?*
- *How are students assessed with regarding inquiry learning? Is it the process or the product?*
- *Is there a dilemma between what you are doing here with regard student learning and National Standards?*
- *What happens to your students when they leave your school with regard their thinking learning skills and meeting a more formal traditional teaching approach?*

Schools Visited and Why chosen

Over the course of two weeks, from the 3rd August 2009 to the 14th August I had the pleasure of visiting the following schools:

School	Type	Reason
Tahatai Coast School Papamoa	Full Primary	Thinking skills and e-Learning
Selwyn Ridge School Welcome Bay	Contributing	Thinking skills
Welcome Bay School Welcome Bay	Contributing	Thinking skills
Point England Auckland	Contributing	e-Learning
New Market Primary Auckland	Contributing	Solo Taxonomy
Glenbervie Primary Whangarei	Full Primary	Thinking Skills
College Street Normal Palmerston North	Contributing	Habits of Mind
Opunake Primary Opunake	Full Primary	Inquiry Learning
St Joseph's Primary Opunake	Full Primary	Inquiry Learning
Vogeltown Primary New Plymouth	Contributing	Inquiry Learning
Woodleigh Primary New Plymouth	Contributing	A1 Standards and Inquiry Learning
Highlands Intermediate New Plymouth	Intermediate	Thinking, e-Learning and A1 Standards
Spotswood Primary	Contributing	A 1 Standards and Inquiry Learning
Oakura Primary Oakura	Full Primary	Inquiry Learning
Edwalton Primary School	Contributing	Thinking Skills
Djanogly City Academy	Junior Secondary	ICT and Inquiry
Langar Church of England School	Contributing	Inquiry Learning

There are some fantastic things are happening in all of the above schools in terms of student learning and achievement! If these schools are a representative sample (I do hope they are) of New Zealand schools then our education system and students are in very safe and innovative hands.

They range from decile 1A to decile 10 and although there are similarities with all of the schools they are all uniquely different in their own way. They range from schools with a high emphasis on e-learning to others with few computers in the school let alone classrooms. What is very similar is the whole school philosophy, what is happening in one area of the school is happening right throughout the school.

Findings

What things did I discover with regard the sabbatical briefing?

The Inquiry Model originated from constructivist theories of learning
Inquiry learning is when students work together to solve problems rather than receiving direct instructions on what to do from the teacher. The teacher's job in an inquiry learning environment is not to provide knowledge, but instead to help students along the process of discovering knowledge themselves

The inquiry model that I believe is most suited to students and teachers involving authentic areas of study and resulting in quality learning has been around a long time.

The philosophy of inquiry based learning originated from the constructivist work of Piaget, Dewey, Vygotsky, and Freire among others.

"Dewey's theory of learning is that optimal learning and human development and growth occur when people are confronted with substantive, real problems to solve. He believed that curriculum and instruction should be based on integrated, community-based tasks and activities that engage learners in forms of pragmatic social action that have real value in the world."

"The focus on the teacher as expert is central to Vygotsky's learning theory. He proposed that cognitive development is the product of social and cultural interaction around the development and use of tools of a cognitive, linguistic and physical nature. Learning occurs in a Zone of proximal development where authoritative tool users – teachers acting as mentors – initiate and lead students as novices into the use of technologies. This structured introduction into using tools is called *scaffolding*. Work should be structured around projects that demand students engage in the solution of a particular community-based, school-based or regional problem of significance and relevance to their worlds."

"Freire's work is premised on the assumption that the most authentic and powerful pedagogy is one that focuses on the identification, analysis and resolution of immediate problems in learners' worlds. Hence, his approach is referred to as a problem-posing and problem solving pedagogy. Freire argues that any pedagogy must be of demonstrable relevance to the immediate worlds of the students and it must enable them to analyse, theorise and intellectually engage with those worlds." (New Basics Queensland State Education 2010 p6)

Inquiry learning emphasizes constructivist ideas of learning where knowledge is built in a step-wise fashion and where learning precedes best in group situations. The teacher does not communicate knowledge, but is rather there to help students to learn for themselves.

The topic, problem to be studied, and methods used to answer this problem are determined by the student and not the teacher.

Towards Inquiry Education, authors Postman and Weingartner realized that good learners centre their activity on the "dynamic process of inquiry itself, not merely on the end product of static knowledge".

As such, a teacher adhering to the inquiry method in pedagogy must behave very differently, by having the following characteristics (pp. 34–37):

- ❐ They avoid telling students what they "ought to know".
- ❐ They talk to students mostly by questioning, and especially by asking divergent questions.
- ❐ They do not accept short, simple answers to questions.
- ❐ They encourage students to interact directly with one another, and avoid judging what is said in student interactions.
- ❐ They do not summarize students' discussion.
- ❐ They do not plan the exact direction of their lessons in advance, and allow it to develop in response to students' interests.
- ❐ Their lessons pose problems to students.
- ❐ They gauge their success by change in students' inquiry behaviours (with the above characteristics of "good learners" as a goal).

All over New Zealand innovative educationalist saw this approach and realised that it could be used in areas other than just in science. For example in his book 'In The Early World' written by **Elwyn Richardson,** John Melser writes that, "The book, 'gives a vivid picture of a school full of vitality in the pursuit of values deeply rooted in the children's lives and capable of serving them lifelong'. 'Oruaiti School', Melser continues, 'functioned as a community of artists and scientists who turned a frank and searching gaze on all that came within their gambit. Curiosity and emotional force led them to explore the natural world and the world of their feelings…..Studies and activities grew

out of what preceded them. New techniques were discovered and skills practiced as each achievement set new standards.'

In Taranaki teachers, later principals, like Bill Guild, Howard Wilson John Cunningham and Bruce Hammonds (in the '60s and 70's) were also working on this approach and realised the exciting things children learning as a result of inquiry learning.
"Teaching is not so difficult – it is about thirty plus kids, great relationships and doing neat things."
Teachers have two important things to protect- their time and their energy. Waste them on bull@%*t and they can't teach."

Howard Wilson.

There is a very close relationship too between the model that many of us were involved in at secondary school when we were taking part in science experiments and today's student based inquiry

The Situation	Test tubes, Bunsen burners, chemicals
	What I know now
The Questions	What might happen, will happen, why, how, when who
	What I want to know
The Research	Finding the answers to your questions
	The experiment or research
The Conclusion	Discovering the answers that satisfy your questions
	What I found out
The Celebration	Sharing your new learning with others

The work of Fred Biddulph and Roger Osborne in the 1980

The Learning in Science Project (Primary) was a New Zealand Department of

Education funded project based at the University of Waikato and ran from 1982-85. Fred Biddulph and Roger Osborne found from their extensive research that, "*Most science lessons we based on teacher talk and copying notes…resulting in placing considerable demands on children for memorisation, widespread conceptual misunderstanding, and a reduction of interest in science as a curriculum area.*" (Kelvin Smythe Science Alive p6)
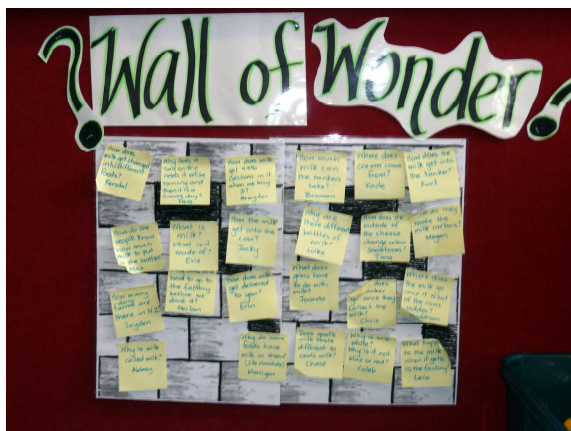
The main findings concerning science teaching (and I would contest all thematic teaching) were that:
- ❐ Children's views often remain uninfluenced by science teaching or were influenced by it in unanticipated ways
- ❐ The information children gained from science teaching was often unrelated to other information
- ❐ The activities and investigations children undertook often did not result in any worthwhile learning
- ❐ Children's attitudes towards science were often made more negative.

The main findings of their investigation concerning children' response to science phenomena were that:
- ❐ From an early age, children make some sort of sense of their world based on their experiences

- ❏ This sense has a major influence on their subsequent learning
- ❏ Children's view of the world often result in a considerable disparity with scientists views of the world

Therefore investigations need to start from what the student brings to the inquiry (what they already know) and progress from here.

In brief Biddulph and Osbornes inquiry approach is as follows

Children be given opportunities and encouragement to…explore aspects of their environment ⟶ ask questions ⟶ seek answers through initiating and carrying our investigations ⟶ draw tentative conclusions.

Their suggestion for science and I believe any area of inquiry should involve:
- ❏ Discovering what students already know
- ❏ An immersion stage – a time of intense motivation to stimulate thinking and generating a desire to inquire
- ❏ Construction of questions for inquiry
- ❏ Researching answers to their questions
- ❏ Drawing conclusions to your questions
- ❏ Presenting your information
- ❏ Celebrating and evaluating the process

The use of field-trips and experts during the immersion to researching stage will only add value to the inquiry.

The importance of questions especially open rich questions

Questions are the heart of any inquiry. Neil Postman and Charles Weingartner wrote in 1969 that, "*Once you have learned how to ask relevant and appropriate questions you have learned how to learn and no one can keep you from learning whatever you want or need to know.*"

"*The weaker the questioning…the less value one is likely to discover or uncover.*" - Jamie McKenzie

"*Smart questions are essential technology for those who venture on the Information Highway*" – Jamie McKenzie

"*Schools without a strong commitment to student questioning and research are wasting their money….as long as schools are primarily about teaching rather than learning there is little need to expand their information capacities.*"
 - Jamie McKenzie

There are an array of what good questions ought or should be – higher order, rich, worthy, essential, open ended and/or fertile however the simplest characteristics of what good questions are comes from the *"Art of Asking Good Questions – Youthlearn's website."*

1. They must be answerable
2. The answer cannot be a simple fact
3. The answer can't already be known
4. They must have some objective basis for an answer
5. They cannot be too personal

McKenzie believes that most important thinking requires one of these three prime questions – Why How and Which

- ❒ Why? Is the favourite questions of four year olds and is the basic tool for figuring things out
- ❒ How? This is the question basic for problem solving and synthesis. The favourite inventors question.
- ❒ Which? This question requires thoughtful decision making, a reasoned choice based upon clearly stated criteria and evidence. This is the most important question of all because it determines who we become.

Yoram Horpaz's inquiry model stresses the importance of the 'Fertile Question." A fertile questions is one that is

- ❒ Open – requires that the inquirer takes a position
- ❒ Rich – requires deep and extensive research
- ❒ Connected – to the topic domain
- ❒ Interesting – to the inquirer
- ❒ Practical – can be coped with in the context of time, material and other constraints

Examples of fertile questions posed by teachers

- ❒ Why did the German people accept an anti semantic system that exploited oppressed and murdered their own citizens?
- ❒ Why do people marry?
- ❒ Why do we sleep?
- ❒ How can your actions to save the planet make a difference?

What is clear is that we must place our students in situations that stimulate them to want to ask questions, and then give them the guidance (teach them) how to ask relevant questions to answer their inquiries

Teacher directed v student directed inquiry

Ultimately the ideal inquiry learning is where students have full ownership of the initial question, idea, problem or issue, where they carry out their inquiry from start to finish. This is the ideal and is where we all should be attempting to reach, however many of our students don't have the skills to come up with fertile questions, and the scaffolding to carry out the task, until these skills have been taught.

If you strongly believe that as teachers you are charged with moving students down the path toward independence as learners then the dilemma of teacher directed v student directed inquiry is not an issue.

"Not all students arrive at the classroom interested about verb constructs, motion and mechanics, biological cycles, or historical timelines, but most students can be helped to construct understandings of the importance of these topics. Relevance can emerge through teacher mediation." (Brookes)

Most inquiry activities that I observed in schools during term 3 have originated out of a teacher directed ideas –

☐ The Middle Ages
☐ From Mountain to Surf
☐ Fizz Bang Pop
☐ What Makes us Tick
☐ Shake Rattle and Roll
☐ Ocean to Motion
☐ Our Big OE
☐ In Our Backyard

Note that the ideas are 'big' allowing for plenty of room to inquire and for students to move to where their interests and questions may lie

The teachers, usually collectively, have decided on the particular unit and immersed and motivated the students to generate their own questions, again with assistance, to develop their own inquiries. They may have started out as a whole class and provided scaffolds that not only teach questioning skills but also how to present the inquiry findings to share with others.

Jan-Marie Fellows calls this Guided Inquiry (Modelled) and likens it to what most teachers do in reading and writing. The teacher provides a display, an activity, photos, drama, movie, anything that promotes discussion. From the discussion rich questions arise. Resources that originated from both the teacher and the student/s are used to answer the questions.

Once students have grasped the inquiry process and have the ability to not only ask rich questions but the skills to answer and present them, they are ready for their own higher order inquiry. As Trevor Bond says, *" The ultimate goal of good inquiry are students who have developed a sound set of learning and information skills and are equipped to work as independent learners."*
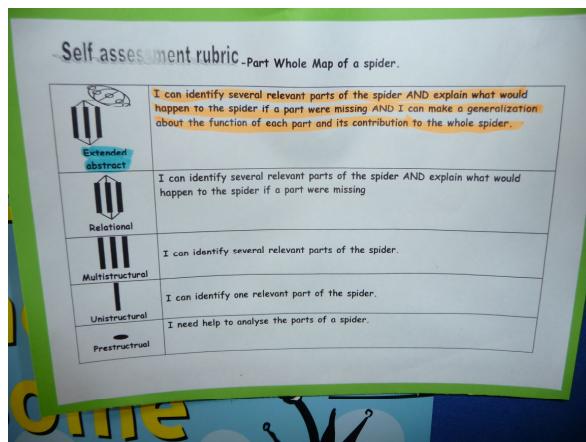He goes on to say that*, "to do these well, schools need to:*
Identify the skills they believe an independent learner will have when they leave school
Develop a rubric of stages of development of these skills
Determine what stages of development students need to be at in the chosen skill to be ready for progression for the next stage of independence"

Process v product

An area that promoted much discussion in schools was the question regarding the assessment of the inquiry process and whether students were assessed on the process of inquiry or the product of their inquiry.

Most schools have rubrics that they use and students then check on the rubric to both self assess and teacher assess how they are or have progressed with regard the inquiry process. A number are based around the various thinking tools that the school also uses – Costa, deBono, Broom, Solo

An example of part of an inquiry unit rubric using Solo from an Auckland School

Students/teachers can gauge how well that the inquiry has or is proceeding - from **Immersion**⟶ brainstorming⟶**Questioning** ⟶ finding out ⟶ **Creating** ⟶ sharing⟶ **Reflecting**

Have they answered the inquiry questions to a level commensurate with their age and ability and has it been presented in such a way as to engage its intended audience? Again rubrics help with this

With this very simple assessment tool students place themselves around the circle depending upon what they preserve to be their particular skills and strengths within a particular field.

Most students in this example see themselves as either novices or apprentices, yet as the inquiry proceeds and their understanding builds they will move to practitioners and ultimately onto being experts within the inquiry field.

The spin off too from the use of rubrics and/or exemplars of work is that students initially can see what is expected of them. They can be used for some students to achieve to the expectation and for others to move right past it

Immersion and motivation for authenticity

The old chestnut, 'You don't know what you don't know!" really does apply to inquiry learning as students with little or no prior knowledge of say sustainability will have little or no idea what to inquire about.

Immersion allows students time to become familiar with aspects of the topic so as to be able to develop questions and want to genuinely learn something new that wasn't known before.

Immersion can take many forms –
- ❏ From a problem such as eliminating litter from the school ground
- ❏ A performance by the staff of a nursery rhyme to stimulate inquiry in a reading genre
- ❏ Current events on earthquakes, tsunamis, terrorism
- ❏ A movie or clips from U-tube say on Nazi Germany
- ❏ A guest speaker
- ❏ A field trip

Basically it is anything that truly motivates students to want to find out more about a particular event or occurrence. Where there is authenticity or it is 'real' the students the greater the inquiry success

This is why this type of learning sits so well with the New Zealand Curriculum "Students learn best when they are able to integrate new learning with what they already understand…they maximise the learning time, anticipate students' learning needs and avoid any duplication of content."

If the learning is seen as important to the student then a great interest and mastery will result.

For an inquiry to be truly successful students need to be immersed in it.

Personalising the inquiry especially the findings

One of the interesting observations noticed while moving around classrooms was that many of the inquiry findings – the charts, power-points, models etc, lacked personal voice. They could easily have been 'Googled', cut and pasted and prettied up and stapled onto the wall.

The inquiry must show that the learner has learned something and it has challenged or changed their perception of whatever they were inquiring on.

Bruce Hammonds believes student voice can quickly be gauged by examples of the following markers in their inquiry work
I was wondering…perhaps
I first thought…
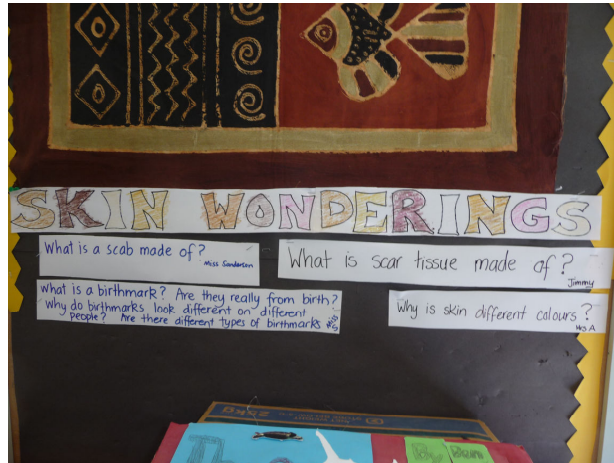*I read that…(with reference or website)*
I now think…another reason could be
I am confused about
I didn't know… I now know
This is what happened… and I noticed that
Scientists say….and in my opinion
My conclusion is..

In Robin Cleggs words, "*We are empowering the child*," but not only are we allowing them to inquire we must ensure that the result of the inquiry is that the new learning can be articulated in their words.

Getting everyone on the same page regarding the inquiry process and having some things non – negotiable
Now this is an interesting one. I believe planning for a particular teacher based inquiry should be done collectively by staff. Not only does it lessen teacher workload but the possibilities for inquiry are greatly increased as each teacher brings their own uniqueness to the planning table.

Where the teachers and students end up with their inquiry is quite a different matter. When you see exactly the same topic, art, written language in a number of classrooms you begin to think…clones. Where the same topic exists and students are diverging all over that is a different matter.

What is essential is having a model of inquiry that is agreed upon such as the basic Biddulph and Osborne example above, or another simple model
What do we already know, what do we need/want to find out, how will we go about finding it out, how will we know and show that we've got there?
Whatever is decided, and it up to schools to decide it must be adhered too so there is continuity for students and staff.

This does not diminish the role of creativity or allow both teacher and students to go off on a tangent it just ensures that the they all have a working understanding of a model of inquiry

Another observation particularly strong in schools in Taranaki is the idea of A1 Standards of presentation. Students are taught using scaffolds how to present work from the basic A4 sheet to charts and power-points. There is clear planning for inquiry and planning for presenting the new knowledge.

With regard power-points I have been particularly intrigued with the notion of Petcha Kucha where a power-point has only 20 slides, all are visual only and they rotate automatically every 20 seconds. Student power-points become extremely *powerful* as they need to really have understanding of what they are presenting rather than cutting and pasting from their notes.

What is also as important as the immersion is what happens at the end of the inquiry – the Celebration. If the inquiry was worth doing then it is definitely worth sharing and celebrating with others. Usually this is done class wide or syndicate wide however I would propose that it be done school/community wide. Students from the school, parents and community members are invited to celebrate with a display of inquiry in findings

Using a variety of thinking skills to enhance the inquiry
Over the past 10 years 'Thinking Skills' have really exhibited themselves in schools throughout New Zealand. This is not to suggest that thinking didn't exist prior to this. Like inquiry learning they provide teachers and students with a scaffold to improve thinking.

Programmes that one commonly sees in schools include Costa's Habits of Mind, Broom Taxonomy, SOLO Taxonomy, Gwen Gawith's Action Learning, Multiple Intelligence, and Learning Styles. Most schools use aspects of the above to enhance the inquiries.

College Street Normal in Palmerston North has Habits of Mind totally embedded into all aspects of their culture. They use rubric in all areas of teaching and learning to improve both teacher and student achievement and performance. Staff and students move from Novice ⟶ Apprentice ⟶ Practitioner ⟶ Expert. The school have developed a triangulated system to improve teacher performance by observation and coaching. Twice a term an expert in a curriculum area, the syndicate leader and the teacher meet and work on

improving teacher skills and performance. Both of these 'tools' have as their ultimate goal improved students learning by improving teacher practice.

What about Literacy and Numeracy?
In general literacy and numeracy tend to be 'stand alones' occurring in the morning with the inquiries taking place in the afternoon. Guy Claxton, author of "What's the Point in School?" says that "*Learnacy is more important than literacy and numeracy.*"

Up until very recently both Bruce Hammonds and Lester Flockton referred to them as the Twin Evils for taking up so much of our teaching/learning time to the detriment of the other curriculum areas. Since April 2009 Bruce has had quite a notable change in thinking where he now refers to Literacy as the key to inquiry learning.

If they are taken in total isolation with never any attempt to integrate with the inquiry that is occurring in the afternoon then they do remain the twin evils. Teachers should be integrating – If the inquiry is based around say, *Sinking and Floating* then where possible guided and shared reading could be based on this too. Likewise there is ample opportunity to facilitate work in mathematics around volume and capacity. Why not incorporate science experiments into the reading programme or patterns into mathematics.

The use of rubrics or exemplars to guide students outcomes and thinking

One constant throughout all schools visited was the use of rubrics and or exemplars to assist both teachers and students in criteria for goal setting and assessment. Much has been written about learning criteria and these too were very evident so once again students and visitors could clearly see what was being attempted in the inquiry.
There is a huge raft of literature available on the advantages of using rubrics. They offer:
- ❒ Improving student performance by clearly showing the student how their work will be evaluated and what is expected.
- ❒ Helping students become better judges of the quality of their own work.
- ❒ Allowing assessment to be more objective and consistent.
- ❒ Reducing the amount of time teachers spend evaluating student work.
- ❒ Promoting student awareness about the criteria to use in assessing peer performance.
- ❒ Providing students with more informative feedback about their strengths and areas in need of improvement.
- ❒ They are use and easy to explain.

e-Learning is only a tool but can be a significant player in the outcome of the inquiry.

The use of e-learning between and within schools with regard the inquiry process varies greatly. From e-learning schools were laptops are available all day everyday for student use, suites where classes visit, to less than 1 desk top per classroom.

Schools are using as their e-Learning platform either Macs to PCs. Those schools who opted and have gone down the Mac e-learning route seem to have a distinct advantage with regard ease of application using movies and music to complement their inquiries. It can be done with PCs but it is a lot more involved and time consuming. Unfortunately for most schools cost is the

inhibiting factor both in platform used and the number of computers available for student use. For the cost of a Mac you can pick up 3+ PCs or laptops.

The wonderful advantage today with the use of the World Wide Web is that unlike 20+ years ago you don't have to wait 18 months for the writing resources to appear after an event they are there instantly. No longer are you restricted to a couple of writing resources and mountains of photo-copying, it becomes a matter of finding a search engine, entering the inquiry and there you go.

The teaching skills now revolves around deciding what is appropriate – guiding younger students to these sites, and also getting students to still challenge the authenticity of the information, and not blindly cutting and pasting.

The Web is available 24/7 for many of our students so research and presentation can be done at anytime, anywhere. An added advantage is the video conference where experts can be digitally invited into the room to speak with the students

The number of machines can also provide another benefit for inquiry in that as is often the case with 2 students sharing a computer, increased collaboration and co-operative learning results.

e-Learning also comes to the fore when presenting the outcomes of the inquiry. For those of us graphically challenged, not the neatest of writings or drawers the computer has helped us present on a more level playing field. Used also as movies, power-points, radio report, animations they can enhance the outcome of the inquiry and make it available to a much wider audience than their own class/school via podcasting, blogs and wikis

The advantage of the inquiry approach

On observing inquiry in action in classrooms, having taken inquiry in my own classrooms, discussing outcomes with teachers and principals it is clear that this type of learning has huge advantages over the more traditional subject based teaching.

Bruce Hammonds outlines a number of advantages of using the inquiry approach to teaching and learning in his 'Leading-Learning Blog
Such an approach to learning he says:

1. Overcomes the dichotomy between thinking and knowledge as students need to both do and know
2. Supports the learning of a range of skills and competences in realistic settings
3. Develops *habits of mind* associated with lifelong learning
4. Integrates curriculum areas
5. Enables students' learning to be assessed using criteria similar to those in the real world
6. Develops positive and collaborative relationships between teacher and student

7. Provides opportunities to meet the needs of students with varying skill levels, learning styles and particular talents
8. Has the potential to engage and motivate bored learners and jaded teaches.

"Students who actively make observations, collect, analyze, and synthesize information, and draw conclusions are developing useful problem-solving skills. These skills can be applied to future "need to know" situations that students will encounter both at school and at work.

Inquiry-based activities cause us to revise our prior understandings and deepen our understanding of the world. Through inquiry we develop important skills such as careful observation, reasoning, critical thinking, and the ability to justify or refute our existing knowledge. Lastly, because inquiry begins with a meaningful problem or issue, the process engages students as they come to value the driving questions that motivate their inquiry process". (Thirteen)

Students still require knowledge and skills particularly those associated with literacy a numeracy "the keys to powerful inquiry," and traditional teacher dominated learning are still very relevant. However most other curriculum areas can be taught in an inquiry way.

The link with inquiry learning and the new curriculum
The aim of the **New Zealand Curriculum** is develop students who are
"Confident Connected Actively Involved, Life Long Learners."

In the section on the **Key Competency** of **Thinking** it states that students need to be seen as '*Active, seekers, users and creators of knowledge*. Students are encouraged to *ask questions and challenge the basis of their assumptions and perceptions.* Again in the Key Competency this time of Managing Self it states that *students need to have a can do attitude, able to establish personal goals, make plans and manage projects*.

With the curriculum areas:

English   Students need to be able to *make meaning of ideas and information*.
The Arts   Students are to *use their imagination to engage in expressing their interpretations*
Mathematics Students are to *develop the ability to think creatively, critically, strategically and logically and to carry out procedures*
Science   Students *making observations and carrying our investigations*
Social Science Students are to: ask questions, gather information, explore and analyse and reflect and evaluate their learning
Technology   Is about designing products

In **Effective Pedagogy** inquiry is emphasised – *where teachers are asked to help students in the ability to assimilate new learning, relate it to what they already know and learn to think about their own thinking. Effective Teachers are to stimulate the curiosity of their students, require them to search for relevant information and ideas and challenge them to use or apply what they have discovered by means of learning conversations.*

As Bruce Hammonds says, "With all of this in mind, it is a wonder that Inquiry Learning didn't have a section of its own!"

Conclusion

In a paragraph this is what I've found

- ❐ The concept of inquiry learning has been around a long time, and we have used it and put it away as the urgent outweighs the important in schools.
- ❐ To be successful we need an agreed model for all staff in your school to follow.
- ❐ The importance of questions especially ones that begin with *why, how and which*.
- ❐ Initially the inquiry is likely to be teacher directed with student directed the ultimate aim.
- ❐ Ensure that the findings from the inquiry are personalised
- ❐ Assess using a matrix that students have agreement with.

Finally thank you to everyone who assisted with this sabbatical report.

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