Inquiry Learning - Way of doing or way of being?

Examining inquiry learning and the dispositions of effective of inquiry learning teachers

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In November 2007 following a lengthy period of trial and consultation, the New Zealand Ministry of Education launched the revised New Zealand Curriculum (NZC). Schools were required to give full effect to this document by 2010. In doing so, schools were challenged to review their curriculum delivery aligning them to better reflect the needs of their community; and the vision and principles that underpin the NZC.

'Curriculum is designed and interpreted in a three-stage process: as the national curriculum, the school curriculum, and the classroom curriculum. The national curriculum provides the framework and common direction for schools, regardless of type, size, or location. It gives schools the scope, flexibility, and authority they need to design and shape their curriculum so that teaching and learning is meaningful and beneficial to their particular communities of students. In turn, the design of each school's curriculum should allow teachers the scope to make interpretations in response to the particular needs, interests, and talents of individuals and groups of students in their classes.'
(Ministry of Education, 2007, p. 37).

Attempts to align the delivery of local curriculum with the NZC vision of developing young people who are "creative, energetic, and enterprising, confident, connected, actively involved, lifelong learners" (Ministry of Education, 2007, p. 8) has seen many primary schools either adopting generic models of inquiry learning or developing their own inquiry processes based on a hybrid of approaches which they think best reflects the needs of their 'local communities'.

Onerahi Primary School has been one school that has continued to work towards strengthening its understanding and delivery of inquiry learning. The main focus being: to raise achievement and strive towards growing 'thoughtful, creative, inspired learners'.

Inquiry learning is viewed by many as a strong catalyst for developing the vision and principles as outlined in the NZC and is used as a pedagogical approach in many New Zealand schools. While the curriculum does not specifically

endorse inquiry based learning, its vision does challenge schools to provide learning experiences that will enable students to learn how to be "critical and creative thinkers; active seekers, users and creators of knowledge" (Ministry of Education, 2007, P.8) thus aligning the curriculum with many 21st century learning ideas.

As a school leader, and with my own experiences of trying to construct meaningful and worthwhile approaches to delivering an integrated inquiry based curriculum, I continue to question;

1. the degree to which teachers understand the principles that underpin inquiry learning,
2. how those principles are truly reflected in their practice,
3. how our school approach compares to approaches used in other schools,
4. how well our school approach is aligned to the vision and principles of the New Zealand Curriculum.

The key purpose of my sabbatical has been to:

1. Investigate understandings of inquiry learning and how these might transfer from theory into classroom practice;
2. Investigate a range of curriculum designs and enquire how these might take students beyond surface learning.

The aim has not been to find, adopt or adapt a model of inquiry, but to enquire into the pedagogical beliefs of school leaders, investigate the dispositions of 'skilled' inquiry learning teachers, and research the principles that underpin effective inquiry pedagogy.

It is important to understand that my investigation is not a rigorously controlled research project but a personal inquiry itself. As such, the style of this report is informal, multi-dimensional and often reflective in its nature.
Not withstanding, I have made every effort to cite references to the research I have made, and acknowledge the contributions of those who have assisted me in my inquiry.

Key Questions for my investigation

My initial wonderings centred around five key questions for discussion;

1. Does your school use an inquiry learning model/process?
2. Why did you adopt the model you use?
3. How is this taught in your school?
4. How does it allow for both routine and adaptive approaches to teaching?
5. What does effective teaching look like within the context of inquiry learning? - (What do you consider to be effective dispositions of an effective inquiry-learning teacher?)

After some interaction with education consultants, Trevor Bond and Lane Clark, in particular, I was challenged to go further and consider how teacher attitudes, values and beliefs about teaching affected the delivery of inquiry learning approaches. Trevor commented, "I presume with the word 'disposition' you mean… 'A person's inherent qualities of mind and character,' and you are not discussing their related beliefs, knowledge and professional skills. I wonder if you are going far enough just considering their dispositions. I have a feeling that there are a number of people who may have the dispositions we would identify but without the relevant professional beliefs, knowledge and skills they still wouldn't make an effective inquiry teacher".

- What are the dispositions of an effective teacher?
- Why would we expect there to be a differentiation between the two?

Lane Clark responded further in a blog post prompted by my initial query;

'Dispositions, defined as the internal filter that affects the way a teacher is inclined to think and act on the information and experiences that are part of his/her teaching context.' (Schussler, 2006, cited by Clark 2013)

"I really believe that dispositions are shaped by our values and beliefs first and foremost. It is the values and beliefs that drive the inclination, without which, the knowledge of the dispositions, and even the ability to employ them, are rendered irrelevant.

If you are in a leadership position or, like me, in a position where you are trying to influence pedagogical practice; the more critical questions might be:

- *What are the characteristics of effective inquiry?*
- *What are the values and beliefs that underpin this kind of inquiry teaching?*
- *Can the values and beliefs of others be influenced and if so, how?" (Clark, 2013)*

Lane elaborates on her thoughts in her blog post; A puddle. A pond. A lake. An ocean. (September 6, 2013)
http://www.ethosconsultancynz.com/profiles/blogs/a-puddle-a-pond-a-lake-an-ocean?xg_source=activity

As a result of both Lane and Trevor's responses, my discussions with schools continued to centre around the characteristics of effective teaching and how the influence of teachers' attitudes, values and beliefs affected student inquiries.

Why Inquiry Learning? - Education Bandwagon or Future Focussed Learning?

Much has been written about the exponential rate of change in the 21st century. As such, a renaissance in education is not looming but present. Exponents such as Nottingham, Dwek, Resnick, Claxton, et al, argue that we can no longer view learning and intelligence from the traditional 19th century paradigm with *fixed* mindsets (where we are good at some things and poor at others; and scores on aptitude tests determine our level of academic success), but that we must acknowledge the increasing inter-connectedness of the world we live in. As such we must view

intelligence and ability with a *growth* mindset that can be nurtured and continually developed through meaningful challenge.

One of the eight guiding principles of the New Zealand Curriculum is coherence. Schools are charged to offer students a "broad education that makes links within and across learning areas" (Ministry of Education, 2007, p. 9). This notion is also supported by Drake (1998) who argues, "The world we live in is changing, and education must change with it. If we live in an interconnected and interdependent world, it only makes sense that knowledge is represented as interconnected and interdependent." (Drake, 1998, cited by Fraser, p.18).

The NZC Principles "embody the beliefs about what is important and desirable in the school curriculum." It also requires schools to ensure that students are able to "reflect on their own learning processes and learn how to learn,' as well as 'look to the future by exploring such significant future- focused issues as sustainability, citizenship, enterprise, and globalisation'. (Ministry of Education, 2007, p.9).

We are now in an age where we are experiencing exponential shifts from text focused learning to one where the communication landscape is 24/7, multimedia, and multi-dimensional. What was once a linear process of learning, through reading and writing and a focus on rote recall, is now increasingly multi-faceted with access to the Internet and more affordable information communication devices. This exponential rate of access to information and an increasingly interconnected world' challenges all educators to consider a new set of principles for teaching in the 21st century. What is required in an age of escalating abundance, automation, and globalisation is a group of learners who can now navigate in what Dan Pink (2005) refers to as the "Conceptual Age'. This requires school leavers to consider how they can;

- forge relationships,
- tackle novel challenges instead of solving routine problems,
- synthesise the big picture rather analysing single components,
- collaborate to achieve desired outcomes

When developing a point of difference in the conceptual age, Pink suggests three questions for consideration:

1. Can someone do it cheaper?
2. Can a computer do it faster?
3. Is what I am offering in demand in an age of abundance?

In his work Whatever Next? A Global Curriculum Framework for the 21st Century, (2008) Mark Treadwell contends:"The outcome of education has fundamentally shifted from one of remembering knowledge to one of being able to work with knowledge to construct understanding. The next stage is to take that understanding, synthesising the underlying conceptual frameworks in the mind and apply imagination in order to come up with creative and innovative new ideas". (Treadwell, p7)

(Retrieved **http://www.marktreadwell.com/Whatever_Notes**, 15 November 2013)

"The exponential rise in our knowledge and understanding of our world means that we have no idea what knowledge students must learn. The focus of these changes is to develop lifelong learning capability so that learners can learn what they need to learn Just in Time (JiT) rather than Just in Case (JiC). The end point of learning would then shift away from learning and recalling endless knowledge (episodic memory) to developing an understanding (semantic memory) of the core concepts across each of the competencies and learning areas" (Treadwell, **http://www.marktreadwell.com/**)

Jane Gilbert (2005) supports these notions and suggests that the shift from the industrial age to a 21st century view of knowledge is a challenge for education systems because it gives knowledge a new meaning. Rather than being seen as something that can be stored by experts, it is increasingly being viewed as a process and is valued for its ability to "do things." A concept regarded as 'performativity'.

Without an integrated approach where the learner has progressive autonomy over 'what to learn', 'how to learn' and 'why to learn', students will struggle to flourish in an increasingly complex world.

Acknowledging and addressing the unforeseen challenges for all learners in the 21st Century may be one reason why so many schools in New Zealand have adopted the inquiry approach to teaching and learning. The principles and intent of the NZC gives schools the mandate to do so.

"All New Zealand students, regardless of where they are situated, should experience a rich and balanced education that embraces the intent of the national curriculum. The principles should underpin and guide the design, practice, and evaluation of curriculum at every stage. The values, key competencies, and learning areas provide the basis for teaching and learning across schools and within schools. This learning will contribute to the realisation of a vision of young people who will be confident, connected, actively involved, lifelong learners." (Ministry of Education, 2007, p. 37)

What is Inquiry learning?

A quick Google search will produce a range of quotes and descriptions of inquiry learning, inquiry based learning or student inquiry.

Arguably the processes reflect generic cycles that may include some or all of the following steps;

- tuning in /immersion/ ignite / asking questions,
- seeking information,
- sorting and synthesising information,
- using Information/ taking action,
- sharing / celebrating /presenting,
- reflecting/ evaluating.

Two recent articles by Sally Boyd and Rose Hipkins from the New Zealand Council for Educational Research, define student inquiry and curriculum integration, explore the characteristics and origins of five different approaches used in schools, and question the degrees to which these approaches support students to engage in authentic study about real-life situations as suggested in the NZC. In their research they identify two approaches to integration and three approaches to student inquiry.

Two approaches to integration

Thematic Approach - This is often concept driven. Teachers identify the curriculum focus and plan how the connections will be made.

Democratic Approach - This is co-constructed with the students and centres around significant problems or issues, which are collaboratively identified by the teacher and students, where units are not planned in advance but emerge throughout the shared work, and involves students as activists for change.

Three approaches to student inquiry

Generic Inquiry Approach

Students;

- develop skills through a predetermined process,
- report their findings,
- draw heavily on literacy information models,
- often 'take action' as an outcome.

Disciplinary Inquiry Approach

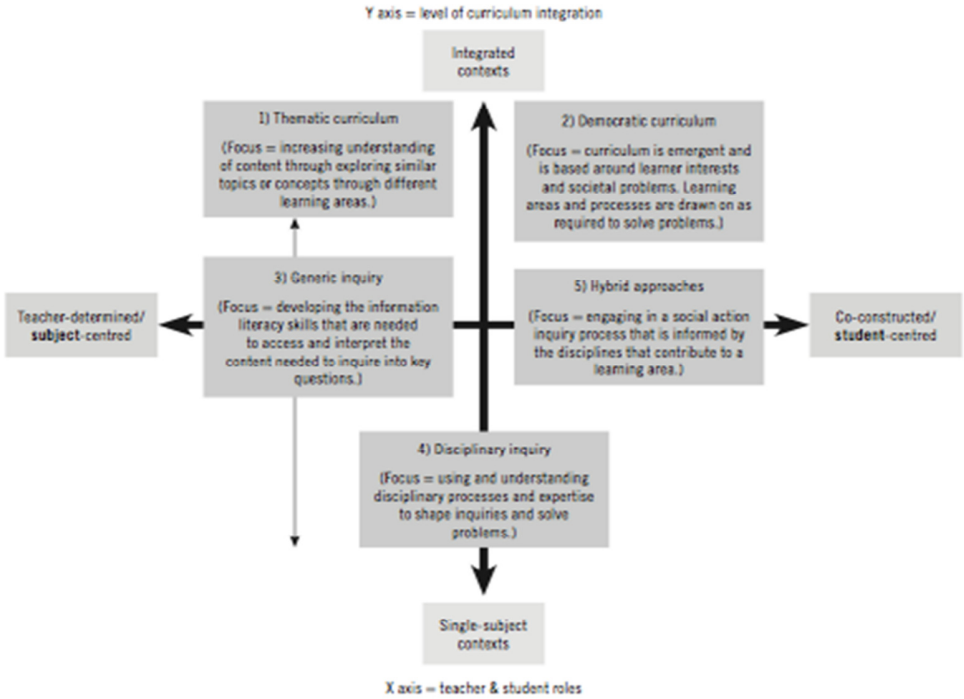
- Discipline specific.
- Involves knowledge-building process that would be used by professionals in the relevant parent discipline e.g.:
    - Science Inquiry- What would a scientist do?
    - Statistical inquiry - Engaging in contextualized data.
    - Historical Inquiry - Employing tools used by historians.
- Tends to be more common in secondary schools.
- Subject specific expertise.

Hybrid Approach

- Blends aspects of generic and discipline approaches and involves some sort of performative action, e.g.;
    - Social Inquiry - 'Now What?' component intended to strengthen a social action - Social Studies
    - Health and Physical Education action - Taking action on issues or concerns to themselves and society.

It is important to note that in my own research no approach is seen as purely student centered. Boyd and Hipkins also support this view. In all approaches, teachers take the role as direct instructor or co-constructors and learners take the position of Learners *in action* ("Active citizens now who learn about participating in the world by actively modelling this in the school setting, where 'Knowledge is seen as performative and young people are supported to engage in projects that require them to use and develop the competencies needed to create new knowledge.") or *Learners in Preparation* (Preparing for a future role as an active citizen. "To be ready for the future they need to develop the skills that enable them to seek and process knowledge, as well as develop an understanding of how others use existing information to create new knowledge.") (Boyd and Hipkins, 2013, P.22).

FIGURE 2. ONE VIEW OF THE INTERSECTION BETWEEN INTEGRATED AND INQUIRY APPROACHES



(Boyd and Hipkins, 2013, P.18)

Boyd and Hipkins note, “When inquiry or integrated-inquiry approaches encourage students to be learners in action, they make more use of emergent and democratic pedagogies. They prioritise learning situations that enable students to work together and develop a wide range of attributes and competencies such as critical thinking and problem solving. They also tend to require students to engage in learning experiences that draw on knowledge from more than one discipline, and to do something with the knowledge they have acquired. Therefore, for these reasons, the learners-in-action approaches appear to be more aligned with emergent 21st-century pedagogies.” (Boyd and Hipkins, 2013, P.8).

Inquiry approaches need to do more than develop the skills of retrieving and repackaging information. At the very least, the information or new knowledge needs to be presented in a different medium to which it was retrieved. When this occurs, or students are able to take some sort of action as result of their learning, they become engaged in a process that promotes a synthesis of disciplines and a higher order of thinking.

If schools are to develop teaching and learning environments that meet the demands of the 21st century and the intent of the NZC then inquiry pedagogies should be framed in ways that:

- Are **relevant** to the learner - students are able to see connections between the topic and their lives;
- Provide rich content that promotes **curiosity**, **questioning** and can be framed into an **investigation**;

- Are **authentic** - Students are able to use real people, places, and events, in their inquiries and, where possible, build an understanding an application of expert knowledge;
- Use real **future focused** concerns or issues that are **meaningful** to both the student and society;
- Are **performative**- requiring student to take some sort of action as a result of their new knowledge;
- **Provide challenge** - Takes students beyond the known. The topics have potential for developing creative, critical, ethical and reflective thinking. This challenge might involve problem solving or the construction of cognitive conflict to test hypothesis or deepen understanding;
- Allow for meaningful **integration** across disciplines – So that students see how knowledge is constructed and view learning as a series of inter-connected disciplines and not a linear process;
- **Utilise information communication tools** – not just to access and store information;
- Take student learning **beyond traditional types of reporting** such as writing report, making posters or "power-pointless" presentations;
- Encourage **collaboration** and **advocacy** where students feel emotionally safe to express their thoughts and opinions, discuss, debate and be heard;
- Ensure there are opportunities for students to **learn how to learn**- to develop information literacy, metacognitive and self-reflection skills;
- Allow students to be gradually handed the **locus of control** of the learning so that there is increasing **ownership** by the learner and **co-construction** of the knowledge.

Inquiry Models - Scaffolds or Platforms?

Through investigating this topic it has been evident that there are a plethora of reports that focus on researching, implementing, and applying inquiry models or inquiry approaches to curriculum. While this has been helpful in developing a personal synthesis of good practice, this, to me, is not enough.

20+ years of experience as a classroom practitioner and school leader illuminates my understanding that, just as students have a range of learning complexities, (sometimes referred to as 'learning styles', 'modes', or 'intelligences') the same applies for teachers.

Add to the mix the different "culture" of each class, (by this I mean, year level, gender ratio, ethnicity, school location, etc.) the processes might well be similar but the interpretation of any particular inquiry model will look different in each room.

From my experience managing change in a school, it is evident that, in many respects–whether it is developing behaviour management plans, implementing Information Technology (ICT) initiatives, facilitating professional inquiry programmes or implementing curriculum initiatives; one size does not fit all.

When presented with the assignment of using a school-wide inquiry model in their classrooms, some teachers will rely on a step-by-step process to guide them and their students to an outcome, ensuring there is a strongly recognisable scaffold for them to "hang their hats" on while others work in and around the process, using different stages and indicators more as "touchstones" for reflection, review, and re-action in their journey to an outcome or further inquiry. Neither is necessarily better than the other *if* the outcomes result in *real* shifts in learning for the student and empowers that student towards the NZC vision of being a confident, connected, actively involved lifelong learner. The challenge here, as many school leaders have pointed out, is how to authentically and manageably document these real shifts in learning. Summative assessments do not adequately demonstrate the complexities involved in a learner acquiring new levels of understanding so schools are continually researching and reviewing ways to capture and measure these shifts.

If this is the case, then why do schools adopt school wide models? Why not allow the flexibility for teachers to develop a model for their own situation?

No doubt there are schools that do adopt this practice. In doing so, they would have to demonstrate that this is based on very sound pedagogy and strong inquiry learning principles in order to ensure that they are delivering the best possible outcomes for their learners.

I would suggest that many New Zealand schools have adopted or developed school-wide models for some or all of the following reasons:

- **Mandate-** To show how they meet the mandatory obligations of the NZC while addressing the issues of a crowded curriculum through an integrated approach;
- **Streamlining** – To develop a collective understanding across the school which links with the pedagogical principles of their "local curriculum". In doing so, curriculum goals, strategic targets, school wide professional development, and resourcing can also be better aligned and planned for;
- **Scale -** The greater the size of the school, the greater the challenges of managing change. A school wide model for inquiry learning (if adopted) promotes manageability and greater consistency of practice;
- **Localising the curriculum -** Schools that have unpacked the curriculum and considered the needs of their local stakeholders through community consultation and analysis of assessment, are able to develop models that reflect the uniqueness of their community, and the pedagogical principles they value. Many put their own spin on established pedagogies, creating a hybrid approach and *localising* these by perhaps adapting or developing local acronyms and visual contexts which students can identify or commit to memory. Schools also report that this makes it easier for students to articulate their learning or stages of inquiry.

While it is constantly evolving, Onerahi Primary School has developed a school-wide model for inquiry and has *localised* it around its vision and its logo; 'Thoughtful, Creative, Inspired Learners'.

The Onerahi Model

OPS uses a hybrid approach based on Rose Hipkins' notion that - while students are actively involved in any or all of the following three disciplines, they are retrieving and repacking information.

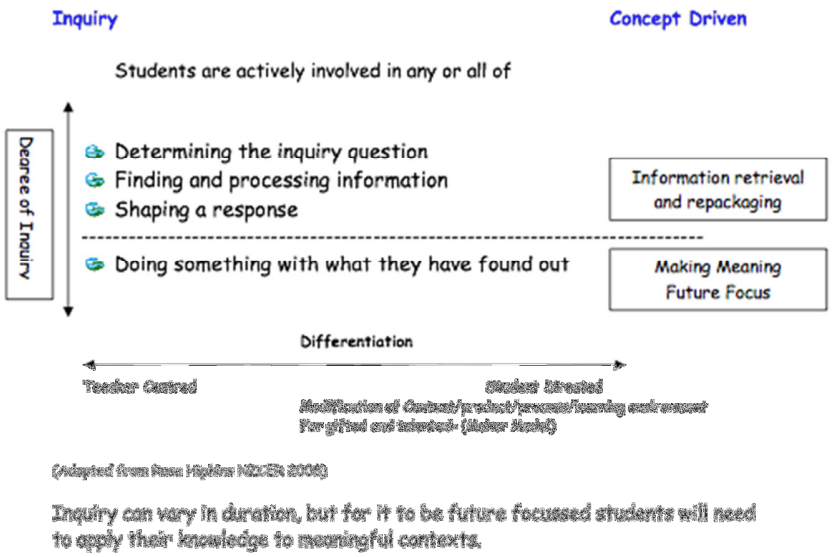
- **Determining the question**
- **Finding and processing information**
- **Shaping a response**

It is not until they are **Doing something with what they have found out** that they are making meaning and are developing a future focus.

The graphic below also illustrates the idea that within the learning maturity of each student there are recognisable degrees of inquiry. As learners mature in skill, knowledge and ability, so too will the degree of which they can apply their knowledge and deepen their understanding of particular concepts.

Differentiation is also an element which needs to be considered by the teacher when acknowledging and planning for the "culture"' of their classroom.

Ensuring that these principles of inquiry are assimilated in the learning, teachers have the flexibility to work within their 'teaching style', but this is underpinned by the pedagogical principles of the school.



This process is one approach. Its intention is to provide a platform that is coherent to students and teachers, and to offer a scaffold for both teachers who rely on a step-by-step process and those who are able to operate more intuitively ensuring that touchstones are being met and self reviewed.

Inquiry learning is one dimension of the school's curriculum. As such, it must also be viewed within the context of topic selection, curriculum coverage and the school's vision.

Teacher Dispositions

In his research *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement* (2009), John Hattie demonstrates that it is the teacher that makes the biggest difference to student achievement and while there are numerous factors which may influence success or otherwise for a learner, arguments around reduced class size, wealth, homework, assessment, etc do not feature as dimensions of high positive influence.

So how do effective teachers make the biggest difference in raising student achievement in schools? What values and beliefs might teachers need to hold in order to shape the dispositions that lead to effectiveness? The latter question, as Lane Clarke and Trevor Bond suggest, is a little more complex. To create a list of important values and beliefs would be too presumptuous as there are so many cultural issues that influence these.

In trying to address the question of what effective teachers might do, some key ideas have arisen. While the list is certainly not finite (and others could extend and elaborate on these), I have included some worthwhile considerations that have evolved from my own investigation.

Understanding that intelligence is a habit of mind

Arguably, many of the dispositions of 21st century teachers should be no different to that of their students. In fact, on the outset, these dispositions or habits should be modelled explicitly for all learners, thus displaying the meta-cognitive processes involved in being a learner. Secondly, those teachers should demonstrate that intelligence is not just an acquired genetic quality that some are born to possess more readily than others but something than can be grown and developed as a habit of mind.

Professor Lauren Resnick suggests, "*Intelligence is the habit of persistently trying to understand things and make them function better. Intelligence is working to figure things out, varying strategies until a workable solution is found. Intelligence is knowing what one does (and doesn't) know, seeking information and organising that information so that it makes sense and can be remembered. In short, one's intelligence is the sum of ones 'habits of mind."* (Resnick cited by Claxton, 2008, P. 62).

Swiss developmental psychologist, Jean Piaget, defined intelligence as "knowing what to do when you don't know what to do." Students who are taught from a *fixed* mindset of intelligence (that he/she is "smart") as opposed to the paradigm that intelligence and knowledge are qualities which can be *grown* through continual challenge, trial and error, and resilience building, often go to pieces when they are confronted with something they do not immediately know how to do.

This has been evident in my own experience of working with some "gifted and talented" groups involved in community problem solving or co-operative learning. These are students nominated for withdrawal opportunities by peers, parents or teachers, with the well-meaning purpose of being able to work with other "like minded students" because of their ability to be academic outliers compared to their cohorts. When challenged to learn, or think, or view the world in a way that is dissimilar to their usual experience, many lack the emotional intelligence and resilience to cope with new or unfamiliar situations. However, by teaching these students with the double-goal of promoting their particular gifts and talents, and helping them to view intelligence as a verb and not a noun, they are able to demonstrate increasing resilience and perseverance when presented with personal challenges. Having studied the pros and cons of withdrawal versus inclusive programmes for these students, the jury is still out. Much depends on the intention of any programme that is being delivered and whether acceleration or extension is best catered for exclusively or not.

Providing appropriate and meaningful challenge

As teachers, we sometimes try to protect the self-esteem of students by creating learning pathways that are so shallow that no one ever struggles. While this may also be well intentioned, how does it prepare students to manage the situations they, no doubt, will encounter when difficulty puts them into what British international education consultant, James Nottingham, refers to as "The learning pit"?

Research shows that those who are protected from the rigors and frustrations of learning are the most fragile when they finally meet them. As cognitive scientist, Guy Claxton, points out, 'nobody ever gets fitter by avoiding exercise'. Students desire challenge; easy stuff is boring.

Vygotsky was one of the first critics of the intelligence quota (IQ) and the view of intelligence as a *fixed* ability. He argued that identifying the students' zone of proximal development (ZPD), and gently challenging them to stretch their ability encourages a *growth* mindset. This is most powerful when the students also identify it themselves, realise that they have the control to grow their learning, and receive acknowledgement of their achievement through meaningful feedback. Of course success lies in ensuring that there is a genuine student–teacher relationship, a *safe* classroom culture where students can experience failure without a loss of self-esteem, and feedback is focused on the *learning* and not the *learner*.

As a result, effective teachers must assist students in acknowledging that learning does not happen without them being out of their relative comfort zones (or in 'the learning pit'). Effective teachers must then give that student the support that assists them in climbing out for themselves and internally acknowledging their own achievement.

When students and teachers change their belief from a fixed to a growth mindset of intelligence, they come to the realisation that it is possible to get smarter. The mind is then perceived as an expandable collection of skills and habits. "It's the difference between constantly feeling you have to *prove* yourself, and feeling free to *improve* yourself." (Claxton, 2008, P.66)

Not all students are cut out for academic success but they can get better at learning. Learning should be hard work and tiring. Real satisfaction comes from perseverance and the fulfillment of achieving something that has stretched our abilities. Perhaps one of the challenges of teaching and learning in the 21st century is that in this age of abundance, instant gratification, and the increasing ability of technology to take the 'hard work' out of pursuits, we are losing a sense of *stickability* and the *thrill of the chase*. Unless we provide meaningful challenges where students can identify a sense of mastery, meaning, and purpose we will continue to struggle to immerse them in the real sense of satisfaction that comes form learning. In trying to achieve meaningful outcomes through inquiry learning we sometimes lose sight of the fact that, in many cases, the process is the product.

Teacher knowledge of subject matter

Teacher knowledge of subject matter is required. Inquiry is not uncontrolled exploration. Teachers don't need to fully abdicate their role as the instructor and inquiry is not laissez faire. Those who do soon find themselves frustrated by trying to meet the diverse demands of all the learners in the classroom, or submit to ineffective surface outcomes. While it is important that teachers genuinely accept that they may not know all the answers, and continually model the habits of inquiring learners themselves, teachers do need to have the subject knowledge to guide deeper exploration of a topic and raise levels of questioning, ensuring that learning moves from the surface to the profound.

The teacher as the learner

Teachers are also not omniscient. One of the advantages of a disciplinary approach to inquiry is that teacher may very well possess deep knowledge and expertise however, if the intent of inquiry learning is to prepare students to flourish in a complex world, then it is vital that teachers also model themselves as a learner. For some, sharing one's vulnerabilities may seem threatening, yet it is vital that we let students in on the secrets to learning. Some ways that this can be done is by teachers showing the students the drafts of work they are participating in, sharing their thinking on what it is like for them to be a learner or encouraging discourse and student feedback on what they are currently learning. University of Calgary Vice Dean, Dr Sharon Friesen suggests that 'inquiry teaching' challenges teachers to think deeply. Teachers must encourage themselves to ask new questions and keep inquiry alive. When they do this, they cultivate this in the students they teach.

Knowing your learners

John Hattie suggests that the teacher's job is to effect change. But we have to work out what change is important to each student. This requires knowledge of what each student brings to the classroom. It requires ensuring that there are structures in place in the classroom for students to be part of the assessment and feedback process. Hattie proposes that learning intentions need to be clear and accessible for the students so that they can say comfortably, 'I don't know this.' As teachers we need to look at learning through the eyes of the students. Listening to what the students are saying, what questions they are asking, and understanding their difficulties. In doing so, teachers often need to resist what was recently described to me as "teacher lust"- the temptation to interject too quickly with the solution. The teacher's role then involves helping the students to understand what the learning journey looks like, where they are on the journey, and what skills they will need to navigate with this increasing autonomy.

Even if teachers are experts at using particular teaching methods, there will be students who do not completely understand the concept. It is the teacher's job to learn what works for different students, ensuring that the limited learning time they do have is optimised.

Know how to employ feedback effectively.

Too often teachers use feedback with little consideration to the message it might be giving to the student. What we say and how we say it can have a subconscious effect on the receiver as well as those around them. Teachers need to pay conscious attention to the language they use. Feedback should provide information relating to a set task or a

process of learning that helps to move students towards their learning objectives. According to Hattie, the most powerful single modification that enhances achievement is feedback. This needs to be framed around the *learning* and progress towards success criteria and not the personal attributes of the *learner*.

Feedback framed around the learner can lead to fear of failure and behaviour that seeks to minimise risk taking or challenge. Praise can comfort, support and assist to create a positive classroom environment but it usually contains little task related information and seldom enhances engagement, goal commitment, self-efficacy or understanding. Punishment and reward also produces little effect compared to formative feedback based on the learning goal.

In his article *Feedback in schools*, (2011) for the publication Feedback: The communication of praise, criticism, and advice, John Hattie illustrates other variables that can have impact on the effects of feedback.

Giving is not receiving - when teachers give feed back to groups, students often believe that the feedback is not about them, so the effect is dissipated. (*Coincidently, this is often true of delivering professional development through staff meetings as a vehicle of change. The larger the group the more dissipated the message, and the easier it is for some teachers to 'hide behind the collective', letting others advocate for them. What is required is a level of discourse that helps teachers to articulate their values and beliefs and participate collaboratively in ways that builds their understanding and assist others' understanding).*

The culture of the student can influence feedback effects- Students from collectivist cultures such as pacific nations tend to prefer more implicit, indirect feedback, which is more group focused. Whereas others from individualist cultures such as the USA (for example) tend to prefer more direct self-related feedback.

Disconfirmation is more powerful than Conformation - Feedback is most powerful when it addresses faulty interpretations of a concept and not a lack of understanding.

Errors need to be welcomed - feedback is most effective when students do not have mastery and more effective when there is error or incomplete understanding. "Too often, students only respond when they are fairly sure that they can respond correctly, which often indicates they have already learned the answer to the question being asked or are fearful of their peers' reactions." (Nuthall, 2007).

The power of peers - Nuthall (2007) has conducted extensive in-class observations and noted that 80% of verbal feedback comes from peers and most of this feedback information is incorrect. Feedback from peers can have positive impact relating to a student's self esteem as a good leaner, but it can also have negative effects as a poor leaner provoking shame and a lack of self worth.

Feedback from assessment – assessment should not only provide feedback to students about next steps, but also to teachers about the effectiveness of their teaching methods so that they can reflect and modify their practice to ensure greatest effect.

One of my interests in this sabbatical has been to examine what others consider the important dispositions of effective inquiry learning teachers. I have spent considerable time in discussion with the schools I have visited,

researching on line, and interacting with knowledgeable experts. My intention was to try and develop a synthesis of the collective ideas. However, to create a list of common or even agreed dispositions would only result in providing a surface response. In this document I have attempted to outline many of the key ideas that have stood out for me. For those wanting a more structured breakdown relating to Inquiry based learning might want to refer to The Galileo Rubric (Galileo Educational Network www.galileo.org) or visit the work of Kath Murdoch http://kathmurdoch.com.au as starting points. Blogs such as http://askatechteacher.com/2013/05/08/11-ways-to-be-an-inquiry-based-teacher/ or http://whatedsaid.wordpress.com/2013/08/03/10-questions-to-help-you-become-a-better-teacher/#comments offer lists of dispositions and reflective questions for teachers. When Building Learning Power, Guy Claxton also offers nine things that Building Learning Power (BLP) teachers do:

1. Notice and comment on children's developing learning muscles *(This relates to teachers encouraging a growth mindset of intelligence);*
2. Focus 'feedback' on aspects of learnable power;
3. Get students talking and writing about the 'how' of learning;
4. Model inquisitive and fallible learners;
5. Display learning images and work in progress;
6. Plan activities that deliberately stretch various learning muscles;
7. Encourage extended, difficult learning projects;
8. Involve learners as resources, teachers and co-designers;
9. Look for links with the outside world.

When investigating any approach to inquiry it is essential to understand what your school values for its learners and *why* such an approach is important. It is also important to consider the *underlying principles* of inquiry learning when reviewing its appropriateness, effectiveness, and delivery in classrooms. Without these considerations any attempt at inquiry learning will result in surface topic-based projects that do little to develop the students' capacities to solve problems, build resilience and manage the complexities of learning.

Is Inquiry a process or a paradigm?

Something that has interested me in this investigation and which prompted my initial wonderings is that of the diverse views of inquiry teaching. Is it a constructive process ("way of doing") that scaffolds the learner towards deeper understanding, or is it an innate way of thinking that encourages constant curiosity, skepticism, questioning, hypothesis testing, and self-reflection ("way of being")?

Treadwell (2008) describes inquiry learning as a process for building the students' capacity to inquire.
"Inquiry learning and guided inquiry are based around the development of clever, open, rich and higher-order thinking questions requiring both professional learning on behalf of the educators and understanding by the learners, of the differences between the types of questions as well as the expected outcomes. Historically there have only been two types of answers; right and wrong. In the inquiry process it is not about getting the right or wrong answer but rather about carrying out a process that builds understanding.
Once the learner understands the general principles that underpin the inquiry learning process then the educator can begin to develop the learners' capability to ask their own open, fertile, rich, higher-order questions but initially the educator will be required to take an active role in this process. This does not mean that the educator will necessarily dominate the discussion but they will direct it, ensuring that the learners have a sound knowledge base with which to begin an inquiry." (2008. p.39)

Treadwell also points out that the inquiry process is not a linear, step-by-step process and it is important that the learner does not apply the inquiry process as if it were a recipe for getting a "right" answer." Additionally, it is a complex process that too often is introduced in its final form at a far too early age. Learners do not naturally posses the intrinsic desire to reflect, review and iterate as this slows down their ability to complete the task. However it is particularly important for those who are encountering inquiry for the first time that they are introduced to a process that allows them to develop the skills they need without being overwhelmed by the potential complexities.

Scientist and director of the Center for Organizational Learning at the MIT Sloan School of Management in America, Peter Senge, argues that inquiry is more powerful when combined with an advocacy that allows learners to explain their own reasoning and assumptions. Inquiry is not just about exploring others' views but also exploring your own. Teasing out biases, conceptual frameworks and viewpoints about the topic being researched is important as these lie subconsciously in the mind of the learner and influence what that learner reads, who they listen to, and how they synthesise the knowledge and information they encounter. This advocacy may take the form of debate, concept-mapping, brainstorming or discourse. The ability of students to advocate their thinking will becoming increasing more effective as they develop their language and communication skills. In the early stages, the emphasis will be on the teacher to record for the students who are encouraged to articulate their wonderings and develop questioning and discussion skills.
Treadwell advises, "It should be remembered that learners have 13 years to develop the inquiry learning capability; therefore to try to complete it by Year 4 would be foolhardy to say the least. In other words 'make haste slowly' for optimum results". (2008, p.4)

Arguably, many teachers do view the inquiry process as a recipe. While recipes are designed to ensure that steps are carried out in an optimised order, it is not until they fully understand the principles of the process they are adopting,

that they begin to rely less on the process and begin to understand what it means for them and what it means for their students. When this understanding occurs, teachers are then able to move from being routine practitioners to intuitive experts.

As one principal pointed out *"What we are trying to achieve is to move the 'locus of control' as much as possible from the teacher to the student. When teachers are teaching from a process and are not prepared to hand the process over for the students to manage, who has the locus of control?"*

The desire then becomes that the teachers and the students understand the process so well that they move from 'routine processors' to 'intuitive experts'.

Success not only depends on the teacher's ability to understand the principles of inquiry learning but also the ability to identify each student's zone of proximal development. The ability to know *when* and *how* to provide direction for students within the process so that they able to climb out of "the pit" for themselves is where teaching becomes a craft. With a growth mindset, this craft becomes an incredibly creative endeavour, which is rewarding for both the teacher and the student.

I fear that too many teachers over the course of their careers lose that sense of why they chose their vocation and view their teaching as a means to an end, looking forward to the next long break. Many see personal reflection and inquiry as another piece of administration and accountability as opposed to a way in which they can inquire into the impact they have on their student's learning and find new and exciting alternatives which might bring about real change for the learner.

This limiting outlook can be due to a number of reasons; personal financial pressures (Let's face it - anybody who thought they would get into teaching for the "big bucks" must be naïve); a loss of purpose or sense of autonomy; the ever increasing demands of mandated accountability and pressure to address government priorities; - the list goes on. It is the intuitive practitioners who themselves model curiosity, a sense of inquiry and a love of learning; who collaborate generously with their peers; who engage in genuine relationships with their students and who are not afraid to hand the locus of control over to their students, that manage to navigate the many constraints and daily distractions and apply their craft with passion and dexterity.

While a process provides a means of scaffolding the learner as a way of coming to wonder; know and understand the world, inquiry learning is also a complex practice of action, self review and re-action which requires a sense of curiosity, skepticism, problem solving, perseverance and a growth mindset of intelligence.

Isn't it all just effective teaching?

When considering the dispositions of effective inquiry learning teachers, is there any difference between these and the characteristics of effective teaching?

In his blog, http://nickrate.com/2012/05/16/inquiry-learning-just-good-old-fashioned-effective-pedagogy/ primary principal Nick Rate poses this question, suggesting that a cycle or linear model only blurs the essence of what an inquiry-learning classroom is all about. When we explore the areas, which might provide the foundations of an effective inquiry-learning classroom, are we not simply talking about effective learning and effective pedagogical approaches?

For example; ensuring there is a strong student/teacher relationship, there is student voice, choice and co – construction of the learning, there are clear learning intentions and success criteria, visible student goal setting and action plans, deliberate questioning, provocation of curiosity.

"When you look at these characteristics of learning there are a number of elements that I believe are the foundations of effective learning and teaching. There is a clear alignment to the characteristics of assessment for learning through co-construction, learning intentions, success criteria, goal setting and reflections. The concepts of a differentiated and personalised approach are captured by involving students in decision making, having different options and outcomes for learning and allowing students to ask questions and follow their own curiosities. The richness of student voice clearly positions the learner in the middle with their learning built around them as opposed to learning being done to them. Building relationships "knowing where students come from and building on what students bring with them" (Ka Hikitia) is central to a trusting and healthy learning environment.

I would argue that an inquiry model takes the focus away from these attributes of effective pedagogy. It puts the focus on packaging learning up into a formula to be followed. If you were to ask teacher's what is inquiry learning, what answers would you get? Would you get, "An approach to learning that is rich in student voice, relationships and student understanding of how we are learning what we are learning" or would the responses more likely be, "When students ask questions and find out the answers to their curiosities… oh and there is an action, a social action at the end." Nick Rate

NZC Effective Pedagogies

"While there is no formula that will guarantee learning for every student in every context, there is extensive, well-documented evidence about the kinds of teaching approaches that consistently have a positive impact on student learning. This evidence tells us that students learn best when teachers:

- create a supportive learning environment;
- encourage reflective thought and action;
- enhance the relevance of new learning;
- facilitate shared learning;
- make connections to prior learning and experience;
- provide sufficient opportunities to learn;

- inquire into the teaching–learning relationship."

(Ministry of Education, 2007, p. 34)

When you consider the Effective Pedagogies outlined by the New Zealand curriculum it is evident that these can be achieved by using an inquiry approach. However, if at the end of the day we are not enquiring into to what makes the biggest impact on student learning any approach we use may possibly be ineffective.

Interestingly, John Hattie's meta-analysis of effect sizes on student achievement demonstrates that the impact of inquiry based teaching (0.31) scored below the desired average effect size (0.40). – (In his analysis 0.40 leads towards an expected growth over a year).

Hattie warns, *"Teaching generic skills of inquiry, which is the common method, leads to this low effect size. Visible Learning promotes the use of SOLO taxonomy. SOLO taxonomy has five levels: no idea, one idea, many ideas, relate the ideas, extend the ideas. The second and third are typically surface and the latter deep processing. Inquiry is more specific to relating and extending (and similar cognitive processes) but it needs ideas to work on. One of our findings is that such processing does not transfer across subject domains which is why Inquiry teaching within (not across) subject domains is likely to have a much greater effect than as a generic method.*

A lot of the problems are advocates that promote a method of teaching (e.g., Inquiry teaching) which then takes a life of its own and ultimately the teaching of the content is downplayed. Subject matter vocabulary is critical, knowledge of ideas essential and this too often gets missed when some follow the advocacy of method. Of course, if firmly embedded within a content domain, inquiry is critical. We prefer "problem solving methods" as this directly invokes a notion of "problems - about what". (Retrieved 2013 from http://visiblelearningplus.com/faqs)

Hattie suggests that teachers should inquire into the impact of their teaching. If the impact is greater than (0.40) then the methods being used are being used to good effect.

Inquiry learning is embedded in the New Zealand Curriculum and if its effect is as Hattie proposes, then how do we deliver an approach that gives an effect size greater than 0.40? It seems that Hattie would advocate a more disciplinary approach to Inquiry as opposed to being taught by constructivist facilitator methods.

"Carl Bereiter has found that inquiry is often taught more successfully using direct teaching methods, by teachers who consider they are change agents not facilitators, and through well planned even scripted lessons. We must not confuse the outcome (inquiry learners) with methods of teaching that abrogate responsibility by the teachers to actually make the difference. A much more effective mantra would be to adopt "problem solving" approaches as this emphasizes the problem, the problem clarification, the notion of success that comes from resolving problems and asks for a better balance between surface, deep, and conceptual understandings."

"Inquiry based learning is low as too often it ignores that you need to have surface knowledge to "Inquire" about anything." (Retrieved 2013 from http://visiblelearningplus.com/faqs)

A dramatic approach

One approach that has captured my attention during this sabbatical has been that of UK based drama educator, Dorothy Heathecote's, *Mantle of the Expert.* "[This] approach places the child at the centre of the learning. The

teacher's role is to create the conditions whereby a mantle of leadership, knowledge competency and understanding is grows around the child." (Fraser, Aitken, Whyte. 2013, p.35) In *Mantle of the Expert,* students take on the roles of *experts* in imaginary *enterprises*, within fictional contexts. The children must work together to carry out a high status *commission* for an important *client*. Along this journey they encounter *tensions* that may arise naturally out of their inquiry, or be planned for by teacher. *Mantle of the Expert* incorporates expert framing, drama for learning and inquiry learning to achieve deeper understanding of knowledge disciplines. The use of drama and fictional contexts allows students to operate in a dual awareness of both a fictional and the real world (metaxis). One advantage of this is that through the use of drama conventions, children are able to step out of adult roles and back into their own world.
One criticism of students trying to solve adult problems to achieve authentic outcomes with other approaches is that they lack the maturity and expert knowledge to solve these problems in an "adult world." This can invariably lead to the frustrations of trying to compete with, or enlist, "real world" experts or enterprises to achieve their outcomes. Exclusive programmes for groups such as Future Problem Solving or Community Problem Solving demonstrate that this is indeed possible and a number of New Zealand groups have achieved international success in doing so. However, these types of programmes tend to cater for exclusive groups of children who are often regarded as gifted and talented and the programmes do not always meet the needs of students as a whole.
By working through their *commission*, fulfilling the brief of a *client* while experiencing *tensions,* students in *Mantle* are able to inquire, explore and experience the role of an expert in inter-disciplinary approaches across the curriculum. This approach allows for both a co-constructed and a disciplined approach to inquiry. They are able to inquire; collaborate; experience ethical dilemmas; problem solve; and reflect on their learning; as experts within a fictional context and a set time frame.
A more detailed explanation of this approach can be viewed at http://mantleoftheexpert.co.nz/history-of-the-mantle/ or http://www.mantleoftheexpert.com/

Conclusion

This sabbatical has allowed me the space to step back from my daily demands and consider the complex and challenging task we face as educators and school leaders. As with any investigation of this nature it has both enlightened and challenged my thinking, and invariably left me with continued curiosity about how we might best meet the needs of our students in a world where the only constant is change.

When eliciting teacher responses about dispositions or characteristics of effective teachers these have generally lacked a depth of thought. Others who have raised similar questions at professional development workshops or in discussions with teachers also supported this discovery in my research.
However this does not surprise me because, unless we provide the time; space; research; and opportunities to engage in challenging discourse that encourages teachers to explore deeply into their values, beliefs and understanding about *learning*, then teacher responses will only tend to be what is sitting on the surface of their thinking.

There is no doubt in my mind that an inquiry learning approach is what is required for meeting the intent of the New Zealand Curriculum. Evidence that I have seen in classrooms suggests to me that a constructivist approach to learning, when done well, can be highly engaging, meaningful and can develop a range of competencies required to meet the demands of the 21st century.

However schools must ensure that the approach they choose continues to address the learning needs of all students and that there is provision for them to build on their knowledge over time. In doing so it is imperative that there are systems in place for teachers to inquire into the effectiveness of their teaching, engage honestly and comfortably in discourse about their practice, develop deep understandings about learning, and that teachers' assessment literacy is also continually strengthened so that they are able to inquire into the impact of the methods they adopt.

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