'Rethinking Intelligence- unlocking learning potential for all students: a study into Mediated Learning Experience- a theory that impacts on our understandings of students' potential to achieve.

Lyn Hough, Tasman Bay Christian School.

Sabbatical report July- September 2015

We cannot solve our problems with the same thinking we used when we created them.

Einstein.

Jeremy stood out for all the wrong reasons. He was slight, even scrawny, with eyes wide apart and tight curly brown hair. He was one of those kids who other kids loved to hate; making silly inappropriate jokes and often getting in the way of more important classmates. When it came time for groups to be chosen, he was always last to be picked and when assigned to a basketball team or co-operative group there would be a collective groan, "Not Jeremy. He's thick, Mrs Hough. He's no help. He makes mistakes. He says dumb things". I've always been drawn to under-dogs and Jeremy was definitely one of these. In today's language he was a 'well below standard student' when it came to most things.

I look back at my time as Jeremy's teacher and I can be grateful that through some careful social engineering, plenty of praise and encouragement and the addition of a wonderful new student with a big heart who befriended Jeremy and charmed the rest of his surly class mates, life was different that year for Jeremy. The social, emotional and academic struggle that life was for him lessened as he experienced acceptance and greater success. National Standards weren't a part of life back then so I'm not sure if he went from 'well below' to 'below.' I do know that he stood a little taller and his 100 watt smile lit up his face a whole lot more as the year progressed. He was in a better position to move onto Intermediate and he finally had friends.

Jeremy had a host of problems and challenges to overcome in order to begin to experience some success in a school environment. Many of the social issues were solved through having a friend but that left many learning challenges that needed to be addressed. Looking back Jeremy had Foetal Alcohol syndrome but in 1997 that wasn't widely recognised in our New Zealand classrooms. The only vocabulary I had to help me support Jeremy as his teacher was that he was clumsy, a social-outcast and struggled with learning.

I have encountered many Jeremy's in my teaching career and, as the years have gone by, I can be encouraged that there are now better ways to describe these students in ways that are helpful. In a very haphazard way I have learnt some skills and strategies that can help to make learning more meaningful for the Jeremys in my life. The greatest encouragement comes when I consider the far reaching consequences of believing that intelligence or cognitive ability is not a fixed commodity. We are all able to grow our capacity to learn given the right environment, tools and relationships to help make this happen. This was not a strongly held belief when I encountered Jeremy.

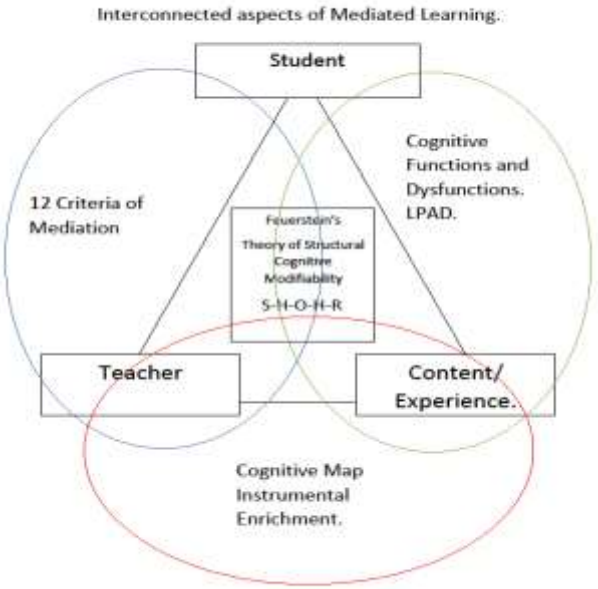
As findings in the world of Neuroscience begin to make their way into educational practice, there is a need to re-examine theories around how learning takes place in reference to new understandings about the brain. Professor Richard Faull, New Zealand's very own professor and director of the Centre for Brain Research at the University of Auckland has pioneered new findings around how the brain is continuously making new brain cells and regenerating itself.

Such research changes the paradigm for our belief in the potential that our students have to learn. Intelligence is no longer a fixed state of being. All children have the potential to learn, yet not all children are learning to their potential. It has been my experience that New Zealand teachers are generally very responsive to changing what they do to help children learn. Even when we utilise good pedagogical practice some of our learners still struggle to make progress. Delivering more of the same only serves to frustrate or kill the motivation to learn resulting in disengagement in learning.

Part of my learning task is to explore the following questions;

- What cognitive underpinnings are at work with children who struggle with the learning process? What are their brains doing to help or hinder their learning?
- What interventions can be put into place to stimulate learning in areas where students struggle? How can we strengthen the right brain function that needs to take place for students to learn, especially students who struggle?
- What can students themselves do to help develop their own thinking and make stronger connections in their learning? How can we help students to become more self-aware of their part in the learning process?

There are many programmes emerging that claim to address some of these areas but one in particular I would like to explore is the Mediated Learning Experience, delivered through the Feuerstein Institute.



Why consider Mediated Learning Experience? Dr Reuven Feuerstein, a clinical, developmental and cognitive psychologist (b 1921-2014) developed innovative methods of testing and teaching through his work with immigrant, refugee and disadvantaged students. Feuerstein's work began with teaching child survivors of the Holocaust. During the 50s, when testing Moroccan Jewish children on standardised IQ tests in the 50s, he discovered that if the children were guided through the question-answer format with a mediator their scores improved dramatically. This led to him questioning beliefs about the fixed nature of intelligence and as a result he developed the Theory of Structural Cognitive Modifiability: an optimistic view that all learners have the potential to change or adapt, and appropriately regulate the way they think, learn and apply their

skill in different contexts when provided with the right mediation or interactions - Mediated Learning Experience. Dr Reuven's work preceded the concept of neuro-plasticity by 50 years.

In the world of education one can find two approaches in thinking to the Jeremy's of this world; a passive acceptance or an active modification approach.

Passive Acceptance

- A belief that humans are essentially unmodifiable and unchangeable
- A belief that an individual's future can be predicted on the basis of present and past levels of functioning.
- A tendency to use 'because of…' statements, e.g. 'Because of Foetal Alcohol syndrome he won't be able… 'Because he has poor social skills and a lack of empathy he will always...'
- A very pessimistic view

Active Modification

- A belief that humans are flexible, open systems that have the potential to be modified.
- A tendency to use 'in spite of' statements, e.g. 'In spite of Foetal alcohol syndrome he is motivated to change…' or 'In spite of his poor social skills he is receptive to mediation...' statements.
- A very optimistic view.

Mentis, Dunn-Bernstein, Mentis (2008) ***Mediated Learning; teaching, tasks and tools to unlock cognitive potential. Second Edition.*** *Pg. 6*

Mediated Learning requires us to actively modify our thinking as educators and teachers of students who are disadvantaged when it comes to achievement. This approach is not aimed at trying to overcome a particular difficulty or teach a specific skill but is aimed at teaching learners how to learn in order to adapt their learning for different situations. Through experiencing Mediated Learning, delivered using specialised tools or Instruments, learners experience change at a cognitive level which enables them to become flexible, efficient and independent learners.

Overview of the Mediated Learning structure

Direct and Mediated approach to learning.

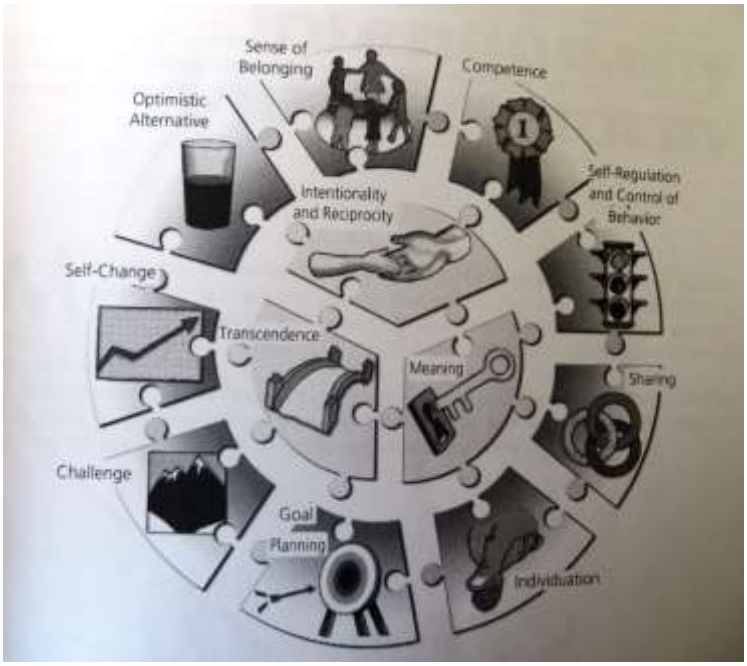
Feuerstein believed there were two modalities of learning: a direct approach and a mediated approach. The direct approach is based on Piaget's formula of Stimulus-Organism-Response. Learning in the direct approach occurs when the learner directly interacts with an input or stimulus e.g. A child while walking along the beach may pick up a shell, feel the texture and notice a hermit crab living inside. The learning they take from this situation is incidental.

In Mediated Learning, Feuerstein extended Piaget's formula by including a human mediator: Stimulus-Human-Organism-Human-Response. The human's role is to help interpret, guide and give meaning to the stimuli providing an intentional learning experience. Returning to the child walking along the beach example: when a parent is present as a mediator they may focus the child to attend to the different colours and textures amongst shells, teaching the child the importance of comparison. The parent may talk about the hermit crab and his need to live inside of the abandoned shell showing the interconnections or relationships between stimuli.

Both types of learning is important but mediated learning is necessary for optimal development. When cognitive issues arise for learners this can be because of a lack of mediation, leaving the learner with gaps in understanding how their world works around them and how they can respond. Rather than blaming the child, Mediated Learning ensures that both the child and the mediator are responsible to respond together to ensure learning occurs. What I find heartening about Mediated Learning is that the teacher has a clear role in working with students to refine and develop thinking skills to enable them to process their experiences and work towards achieving their cognitive potential.

'*The relationship between MLE and the direct exposure modality of learning can be formulated as follows: the more a child has been afforded MLE and the more optimal the mediational process, the greater the capacity of the child to benefit and become modified by direct exposure to stimuli.' Feuerstein*

12 criteria of mediation.



Mentis, Dunn-Bernstein, Mentis (2008) ***Mediated Learning; teaching, tasks and tools to unlock cognitive potential. Second Edition.*** *Pg. 11*

This is the frame work which Mediated Learning sits upon. The above 12 criteria are fundamental to mediation and can be divided into universal, behavioural and social criteria.

Universal criteria include:

Intentionality and Reciprocity - in a teacher/ student relationship, intentionality occurs when a teacher deliberately guides the learning interaction through selecting and interpreting the appropriate concept, stimuli, idea or material and presenting this in a way that draws a response from the student. Reciprocity is when the student is open to the learning process and cooperates.

3 elements involved in and influencing intentionality and reciprocity are:

1. The mediator/teacher - their language, pace, pitch, actions can vary to enhance intentionality.
2. The learner/student - their attention span interest level and availability can affect reciprocity.
3. The stimulus/presentation of ideas or material - varied in terms intensity, repetition, modality etc. can impact both intentionality and reciprocity.

Meaning - this is when the teacher charges the material that is at the heart of the learning experience with value and energy both at a cognitive and emotional level, making it relevant to the learner.

Transcendence - this is 'the bridge that connects related activities and ideas and links immediate needs to ever expanding needs'. It is explicitly helping children connect what they currently learn with other learning.

Aspects that influence the mediation of transcendence are:

1. Finding general rules or patterns that apply to related situations.
2. Linking events across time - past, present and future
3. Encouraging reflection to build a deeper understanding
4. Thinking laterally about experiences and issues.

Behavioural Criteria include:

Competence - in terms of the teacher/student relationship, competence is a student's sense of having been successful at a task and teachers have a very real influence on this criteria. Teachers can help students develop the following

1. A balanced perspective to a situation
2. A positive belief in ability
3. Motivation to make an attempt
4. A determination to persevere

Self-Regulation and control of behaviour - this criteria is at the heart of helping students take responsibility for their own response to learning. Children think about what is appropriate thinking and behaviour when faced with a particular situation or stimulus. Equipping children to adjust their behaviour to situations or stimulus involve:

1. Restraining impulsivity
2. Chunking a complex task into smaller parts
3. Taking a systematic approach rather than just wildly guessing

Goal Planning - Explicit teaching of goal planning is as important as accomplishing a task and is part of helping students develop self-management skills. The five key aspects to goal planning are:

1. Setting realistic and appropriate goals
2. Planning how these goals will be achieved
3. Taking steps to achieve these goals
4. Evaluating and reviewing progress
5. Modifying and adjusting goals as needed. **Challenge -** this is when students have the determination and enthusiasm to cope with novel and complex tasks. When mediating a student's response to challenge, teachers can:

1. Model an open and excited attitude when faced with new or difficult situations
2. Create situations where students encounter new or challenging situations
3. Encourage creativity, curiosity and originality
4. Reward success and mirror the learners feelings of satisfaction and excitement
5. Encourage sensible and appropriate risk taking

Self-Change - when teachers mediate self-change in students they are developing their responsibility for continual personal change or growth. Helping students monitor the level of change and welcome and accept change builds a sense of self-responsibility

Optimistic Alternative - is the glass half full or half empty? This links with the attitude of active modification outlined above. When students are mediated to see and utilise the optimistic alternative, there is a will to change and overcome difficulties.

Social Criteria include:

Sharing - key to sharing is a sense of interdependence; peoples need to connect with one another. Students need to develop an understanding of how to cooperate at a cognitive and emotional level.

Individuation - this involves helping the student to develop their sense of autonomy and unique personality. The result of the development of individuation is that students are empowered and take responsibility.

Sense of Belonging - Feuerstein saw this as an important concept to be mediated when he worked with refugees who were culturally deprived. We all have a strong need to belong and function within a group or community. When our culture is mediated, diversity is celebrated and a sense of belonging develops. When culture is not mediated, cultural deprivation happens which results in the loss of a sense of belonging and affects people cognitively and emotionally.

At all times each of these criteria is linked to and influenced by each other. Mediated Learning is an interconnected system. Many of the above aspects can be linked with good pedagogy as outlined in our New Zealand curriculum and touch on important values and mindsets for learning. Having an understanding of the principles of mediation also adds to our understanding of what is important in the student/ teacher relationship and, more importantly, how to focus learning so students become equipped and empowered to take an active part in the learning process.

So far we have looked at mediation as a learning interaction that takes place to help students become empowered and effective learners, but what happens in terms of a student's cognitive and emotional response to the learning process which can help or hinder student's development?

Metacognition

Many learning theories describe the learner in terms of their place on a developmental continuum e.g. Piaget's Stages of Development. Feuerstein's theory of Mediated Learning describes the way that all learners engage in the cognitive process using a three phases 'topography'- input, elaboration and output. For the sake of explaining the theory these three stages are described separately but in real life situations the relationship between each one is more fluid.

At the input phase data or information is gathered in order to solve a problem or complete a task. Once gathered this information is processed at the elaboration phase where this information is sorted, organised, analysed and tested to get an answer or compete a task that can be communicated in the output phase. A learner can be helped or hindered at any point in this process by specific cognitive functions and dysfunctions. Feuerstein has an extensive list of these which can become a comprehensive tool for teachers to begin to narrow down specific issues in cognitive functioning that students may have. Once identified, the teacher can provide mediation to begin to address these dysfunctions and strengthen the student's cognitive processing.

TABLE OF COGNITIVE FUNCTIONS/ DYSFUNCTIONS.

INPUT PHASE Gathering Information		**ELABORATION PHASE Processing or using information**		**OUTPUT PHASE Expressing the conclusion**	
Deficient function	**Efficient Function**	**Deficient function**	**Efficient Function**	**Deficient function**	**Efficient Function**
Blurred and sweeping perception	**Clear Perception**	**Inadequacy in recognizing and defining the problem.**	**Accurate definition of the problem**	**Egocentric communication**	**Clear and precise language**
Impulsive exploratory behaviour	**Systematic exploration**	**Inability to select and relevant vs irrelevant information**	**Selection of relevant information**	**Difficulty in projecting virtual relationships**	**Projection of virtual relationships**
Lack of appropriate labels	**Precise and accurate labelling**	**Lack of spontaneous comparative behaviour**	**Spontaneous comparative behaviour**	**Blocking**	**Staying calm**
Lack of orientation in space	**Well developed orientation in space.**	**Narrowness of mental field**	**Broad mental field**	**Trial and error behaviour**	**Thoughtful responding**
Lack of ability to conserve constancies.	**Conservation of constancies.**	**Lack of need for summative behaviour**	**Spontaneous summative behaviour**	**Inadequate verbal tools**	**Adequate verbal tools**
Lack of precision, accuracy and completeness in data gathering	**Precision of accuracy and completeness in data gathering.**	**Lack of internalisation**	**Internalisation of information.**	**Deficiency in visual transport**	**Clear visual transport.**
Lack of ability to consider more than one source of information	**Capacity to consider more than one source of information.**	**Lack of inferential hypothetical thinking**	**Inferential hypothetical thinking**	**Lack of precision and accuracy in communicating data and information**	**Precision and accuracy in communicating data and information**
		Lack of planning behaviour	**Planning behaviour**	**Impulsivity**	**Waiting before responding.**
		Inadequate verbal tools	**Adequate verbal tools**		
		Lack of need for establishing relationships-	**Recognising and**		

		episodic grasp of reality.	**understanding relationships.**		

I find this aspect of Mediated Learning theory the most exciting. To return to the Jeremys of my life, in the past I have had hunches or ideas that have been difficult to articulate or to clarify as the only context I have had to describe them has been in relationship to a curriculum area. For instance, many of the Jeremys I have encountered can have difficulty in working out unknown words when reading. In the past I may have focused the student on building their skills and knowledge of the words themselves through focusing on phonological processing skills, keying them in to the meaning of the word in context or the visual look of the word. These are all good strategies but what is the underlying cognitive issue at work here? Depending on the student he may have issues around blurred and sweeping perception. He is not gathering all the data available for working out the word. He may have poor discrimination of the letters that look or sound alike. He may be paying poor attention to the form, shape, size and space of the word. At the elaboration stage he may not even notice that he has made a mistake and will sail on past the word. He has an inability to select relevant cues to help solve the word. When it comes to the output phase, he may have a trial and error approach when reading the word and not take the time to ensure the word is correct. Students are very unique and what can be a dysfunction in one context may be generalised to another context or it may not. Within a learning task many dysfunctions may be operating. The challenge is for the teacher to mediate the task so these dysfunctions can be uncovered and alternative ways to process are highlighted. The further challenge in mediated learning which strengthens the approach is to explicitly bridge the learning into other contexts.

We now have a picture of mediated learning as an interconnected system involving key principles of mediation between the student and teacher, a clear description of the learning interaction in terms of in-put, elaboration and output, and a vocabulary to describe the cognitive functions and dysfunctions that can happen for a student. Feuerstein's approach is practically grounded in the interactions of the student and the teacher, placing responsibility on both to respond to the learning situation. A further tool to help teachers to analyse and adapt a learning experience so efficient and effective thinking skills are developed is the cognitive map.

Cognitive Map

Although called a map, this is more of a tool that allows for an analysis and synthesis of a task so the teacher can come up with a variety of possibilities to help the student engage with a learning experience. There are four layers of analysis in the cognitive map

1. The content or subject matter of the task - when analysing content the key questions are what does it consist of? How familiar is the student with the content? Can the content be varied to help the student's cognitive development?
2. The modality or language of presentation of the task - key questions here for the teacher are: how is the task presented? Visual? Verbal? Pictorial? And can it be varied?
3. The level of abstraction, novelty and complexity of the task - can the task be presented in a way that moves from the concrete to the abstract? Can students be given practice so the task becomes familiar? Can the student begin with easier examples and move to more complex?
4. The cognitive operation or thinking skills required to do the task - what are the thinking skills involved in the task? How can the teacher mediate these thinking skills?

Comparing the structure of a cognitive map with a traditional lesson plan, the cognitive map provides more opportunity to work flexibly and effectively. Where the focus of a lesson plan is primarily concerning specific content, skills and presentation, the cognitive map allows for a variation on all levels. The progression through a lesson plan is linear whereas, with a cognitive map, there is a greater level of fluidity where changes can be made according to the needs of the students. At all times with a cognitive map the focus is improving students thinking and responding to the learning situation. The focus for a lesson plan can be to get through set content or to acquire specific skills in a curriculum context.

Instrumental Enrichment

With a clear understanding of the elements of the mediated learning approach, Feuerstein provided a novel context in which teachers and students can develop, advance or correct particular cognitive skills through a series of instruments. The list of these instruments are

- Orientation of dots - thinking strategies
- Orientation in space
- Analytic perception
- Categorization
- Transitive relations
- Syllogisms
- Orientation in time
- Instructions
- Comparisons
- Illustrations
- Numerical progressions
- Family relations

Each instrument is novel and progresses in a structured way from simple to complex with systematic variations. It helps the teacher isolate the cognitive dysfunction and provide direct mediation to develop and strengthen the thinking skills required. Each instrument present material to be learnt as a tool for developing thinking. Errors become vital clues to helping the student change or modify their thinking and are fully explored and mediated. The goal is to improve mastery rather than to be right or wrong. As much as possible, each instrument avoids focusing on specific content, as the goal of each instrument is to improve thinking. Having a focus on thinking and not on content enables the student to be aware of the thinking skills they need to master rather than on the content that needs to be mastered. This can help students who have experienced high levels of failure within traditional curriculum contexts be more engaged with developing their thinking in a more content free context.

LPAD (Learning Propensity Assessment Device)

One final aspect of mediated learning is the dynamic assessment tool that Feuerstein developed: LPAD. This tool measures the potential of students to change their thinking ability in the learning process and acquire develop and strengthen a particular skill. It is administered without any time constraints and involves a pre-test, mediation, and post-test structure to assess the student's potential to learn through a paper and pen test that is as free as it can be of academic content. The teacher administering the test evaluates the change in response that happens as a result of mediation. The LPAD can be used to determine what Instruments in the Instrumental Enrichment programme are essential for the learner to cover and at what level: basic,

standard or tactile. Employing Mediated Learning and using the Instrumental Enrichment programme is not dependent on administering a LPAD, but it does provide a very comprehensive blueprint of each learner's cognitive profile.

Implementation

When compared to other programmes, Feuerstein's Mediated Learning programme delivered through Instrumental Enrichment is very affordable to the learner. The cost per student per year is $30 when using the Standard suite of tools and $65 for the Basic (uses colour hence increased costs). The Feuerstein Institute are committed to making this affordable to reduce the barriers to implementation.

There is a strong training structure around the Instrumental Enrichment tools. There are two levels of Instrument suites: the Basic suite which is highly visual and at a lower level of complexity. This is suitable for children as young as 4 through to approximately 8/9 years of age. It is also suitable for students who have high learning needs. The Standard suite of instruments is at a higher level of complexity and can be used with students from age 8/9 through to adults. There is also a tactile suite of instruments which translates the Instrumental Enrichment concepts into a sensory mode of learning. This is recommended for students with ADHD and vision issues .

Instrument suite	Time required to train delivered in one week blocks of learning in the school holidays.	Cost.
Basic	Two weeks	$2400 at $1200 per week + GST
Standard	Three weeks	$3600 at $1200 per week + GST
Tactile	*Currently offered in NZ when there is interest- training includes the cost of the instruments.*	
LPAD	Three weeks	$3600 at $1200 per week + GST

It is recommended that the programme is implemented as a specific lesson of up to 45 minutes at least three times a week but preferably daily.

Mediated Learning in New Zealand

There is a strong research base that supports the effectiveness of Mediated Learning utilising Instrumental Enrichment that spans more than 30 years throughout the world. Much of the research has been developed in countries with significant refugee or deprived sectors of the population e.g. Eastern Europe. For an extensive list of research please see the International Feuerstein website.

Mediated Learning is not new to New Zealand. Dorothy Howie conducted a series of studies using Mediated Learning in low decile, high Maori population schools in Auckland in the 90s. Howie saw encouraging results but as an educational practice or intervention, it failed to gain traction in New Zealand at the time.

With the influence and support of Entrepreneur Anne Gaze, there has been a resurgence of interest in the approach. Through her entrepreneurial efforts, Anne initially brought members of the Feuerstein Institution out to New Zealand to share the concepts with interested academics and educators throughout New Zealand in 2013. Since then training has been offered for week long blocks during the school holidays in Auckland, Wellington and Christchurch. New Zealand has a small number of qualified trainers and other trainers have been brought in from overseas to meet demand.

An increasing number of schools are implementing the approach and a number of parents have also completed training. Having attended one week of Basic training I was moved at the number of parents present who had experienced a high level of frustration at the lack of progress their children were making in our current school system and the lack of real support available to help meet their children's needs. Some RTLB clusters have trained in the LPAD assessment and are using this to provide a clear cognitive profile of learners.

A community of practice has been set up through Massey University in Auckland under the supervision of lecturer Mandia Mentis. Mandia has an extensive background in Mediated Learning having been trained under Prof Reuven Feuerstein. New Zealand research is currently being conducted with hopes for early papers to be out in 2016 outlining the impact of Mediated Learning interventions. There is a key need for New Zealand both to show the impact of Mediated Learning in a New Zealand environment and to build the case for introducing this as a strategic thinking programme to support our learners who struggle.

Visits to schools and observations

During my sabbatical I visited or talked to key people in the following schools in Auckland who are utilising Mediated Learning: Mellons Bay Primary, Maharangi Christian School, Murrays Bay Primary, Star of the Sea Primary in Howick and Kristin Private School. I also visited Seven Oaks Private School in Christchurch to add to the picture.

I saw two approaches to utilising Mediated Learning in these schools: a withdrawal programme or a whole class approach. When implemented as a withdrawal programme, a SENCO or Learning Support teacher had received training and was working with small groups of up to 12 children. These children primarily had been identified as achieving below expectation. One group of Special Needs students I observed had severe learning difficulties that hampered them from accessing the curriculum; including autism and sensory processing disorders. Another group of students had been chosen as they were reluctant to engage in class and were seen as not working towards their potential. Apart from the Special Needs group of students, all withdrawal groups that I observed were using the Standard Suite of Instruments.

Students were spending different amounts of time in the programme. Three times a week was the norm with time spent on each lesson varying from 30-45 minutes. For some students lessons began before school and crossed over with the start of the school day: 8.15am to 8.45, 8.45 to 9.15. Other schools students were withdrawn from class often in the afternoon block.

I observed 2 schools where Mediated Learning has been implemented across the whole school. Both these schools were small; 3-4 classes. I also talked to a teacher working in another large school where it was being trialled across two classes in the school. In two of the schools the programme was being delivered by the classroom teacher. In one other school there was a mix of trained classroom teachers delivering the program and a competent teacher aide. Teacher aide or parental support was evident in some schools as well. Time spent on the programme in this context ranged from 3 times a week to daily with a maximum of 45 minutes a session. A considerable investment of time and support was evident to see this programme succeed.

Early results.

During my time observing schools all teachers I spoke with involved in the programme shared anecdotal gains that children were displaying often backed up by parent voice. These gains included the following

- Students showing an increase in confidence when problem solving or sharing ideas both in Mediated Learning sessions but also in class.
- Students showing a reduction in impulsivity and often a 'settling' in behaviour.
- Student using rich vocabulary and demonstrating greater articulation when describing what they did when thinking or broaching a problem solving situation.
- Students becoming more enthusiastic and engaged in learning.
- Students beginning to apply what they had learnt in other context and discussing this.

One example I observed of the positive impact of the programme occurred during my time at Mellon's Bay Primary. One of the Year 4 students has struggled with learning due to his high level of impulsivity. This has made it hard for him to gather the right information, organise it in any way and then show what he knows. The Special Needs teacher took a focus with his group on improving planning behaviour with explicit teaching and discussion about what is involved in planning and how to execute a plan. This boy took what he learnt from his lessons and applied it to his homework set by his class teacher, producing an awesome project on Saturn. He proudly brought this into his class, which I was observing, and took the time to share both his plan and the resulting project.

This student has experienced cognitive change which will impact a range of behaviours, not just those limited to one curriculum area and not just limited to the classroom, but to life.

Key to justifying the use of Mediated Learning is the need to see clear data that indicates possible change from implementing a Mediated Learning programme. As the practice of teacher inquiry strengthens across New Zealand, we as practitioners will get better at this. Kirsten School and Murray Bays Primary are both schools who have gathered both anecdotal and achievement based data and are seeing results. At Kirstin School where this was a small group intervention programme, student's academic results have been tracked

from beginning, mid-year and end-of-year testing in academic subjects. They have also used Ravens as a test and a page from the Organisation of Dots completed as a pre and post-test.

At Murrays Bay School, where the implementation was more holistic over a Year 5 and Year 6 class, students have been tracked using academic results, LASS assessments which focus on cognitive strengths and weaknesses, student and parent voice. Teachers involved in this programme at Murrays Bay shared at the BrainChangers conference I attended at the beginning of the October holidays in Christchurch. This conference showcased a number of programmes focusing on neuroscience including Mediated Learning. These teachers reported on two case studies, a student with low achievement identified with dyslexia and a student with high achievement. Both students had participated in the programme over 3 terms. As a result the low-achieving student had achieved 'at standard' in reading and maths, had significantly improved stanine scores in tests of visual spatial memory, phonic decoding, auditory sequential memory and single word reading using the LASS assessment tool. The parent made the following comments,

'There has been a shift in his engagement, he now 'owns' his own learning…. His learning style has been validated instead of being constantly compared'

The second high-achieving student achieved at above average stanines on the LASS assessment at time 1. Time 2, following three terms on the programme, this student still showed gains in all but two tests. Although a high-achieving student, both parent and teachers saw improvements in this student's ability to apply new skills to different learning situations, deal with challenges and control anxiety and understand the need to consider other's point of view to solve problems.

Mediated Learning at Tasman Bay Christian School.

Tasman Bay Christian School, where I am currently the principal, have been involved in a mini-trial of the programme both in-school and before school. The in-school programme has taken the nature of a small withdrawal group of 5 targeted students from Year 3-5 who had been either at risk of underachieving or underachieving in core academic areas. This intervention has been run by our teacher aide who is both a trained teacher and has also received training in Mediated Learning. The programme has been delivered in half hour blocks four days a week during the morning. Students are withdrawn from class to participate. Some students are into their third term on the programme and others have just begun the programme due to students moving on to other schools and places being available. The material being used is the Basic Instruments which better suits the age group.

A second programme runs before school for a small group of three; two students from our school and a student for a neighbouring school from Year 5 and 6. This second programme is being run voluntarily by a parent as part of her training in Mediated Learning. She is also a trained teacher. The Standard Instruments are being used and this programme is now into its third term of implementation.

All children involved have received a LASS assessment in the past year. We use this assessment once a year with targeted children and will retest when a year is up. We are also tracking National Standards results and gathering anecdotal data. All students are seeing gains in the ability to focus, use rich language to describe problem solving process and show an improvement in problem solving strategies. The challenge, when the programme is not integrated into class explicitly, is to see skills and attitudes bridged into the classroom environment. We are addressing this through 'touch base' times with the teacher and students sharing strategies they are working on with their classroom teacher. Parents are also seeing improvements in their children's ability to process problems and seek wider alternatives.

Future recommendations especially for my local context.

In an ideal world I would be advocating for introducing Mediated Learning across a classroom or even across our whole school. Greater impact is achieved when all children are able to have the opportunity to develop their cognitive skills and experience the power of seeing their thinking grow and develop. Barriers to this in our local context are budget and also changes in staffing next year. In the short term we will continue with this as an intervention and withdrawal programme but explicitly seek to bridge key learning into the class through the children's experiences. We will also continue to monitor and reflect on indicators of change that we are gathering data on: academic, LASS based assessments and anecdotal student, parent and teacher voice.

It is exciting to acknowledge that we can change the structures of our brain and increase efficiency of learning. This is tempered with the realisation that it still takes time to achieve. In our 'quick fix' orientated education world the 'new and sparkly' can often over ride more theoretical approaches such as Mediated Learning that demand change from both teachers and students over time. It is well worth the investment and I look to see further evidence over time.

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