FOCUS: REPORT TO CORONET PRINCIPALS AND THE MINISTRY OF EDUCATION ON SELECTED ASPECTS OF INFORMATION COMPUTER TECHNOLOGY IN CORONET SCHOOLS

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INTRODUCTION

This was to be a succinct report; it has become a ramble. Apologies. It contains a few assumptions and many preferences. No apologies. It is aimed to give feedback to CoroNet colleagues in appreciation of their friendship and support as Lead Principal for nearly three years. To paraphrase Bill Freeman, legendary N.Z.R.F.U. selector, coach and administrator, "feedback is the breakfast food of champions". (Quote courtesy of Paul Lowe.)

The report is also an appreciation to Murray Brown, Ministry of Education who along with Nick Billowes and Chris Jager, backed the enterprise for another three years. To extend the rugby metaphor, the Ministry of Education took another punt. Such acts of faith deserve feedback.

My term's sabbatical allowed me to read widely. Free of the duties of principalship I was like a magpie on 'P'. I was able to match my investigations in schools against some of the literature and reach, hopefully, useful conclusions for those who continue to "run with the ball". I was privileged to have a corner in the Educational Leadership Centre, University of Waikato, and the benefits of the sage advice of its Manager/Consultant, Jeremy Kedian.

This report falls short of a full research paper that would meet the University's requirements. It follows these headings:

- **OBJECTIVES OF THE INVESTIGATION**
- **DATA-GATHERING QUESTIONS**
- **PROCESSING OF DATA**
- **PRELIMINARY CONCLUSIONS ON DATA GATHERED**
- **MATCHING CONCLUSIONS AGAINST THE LITERATURE**
- **FUTURE POSSIBILITIES – WHERE TO? DIALECT, DIALOGUE AND THE NEXT BIG PUSH**
- **SUMMATION AND FINAL THOUGHTS**

Certain ideas repeat and resonate to reveal a substratum. Even though paradigms shift the substratum does not!

OBJECTIVES OF THE INVESTIGATION

As well as the objectives stated in the **Introduction** the intent of this investigation is to assess whether the money spent in CoroNet schools is making a difference to learning. The learning outcomes of video-conferencing and structured I.C.T. professional development seem to be important.

For the purposes of this paper I.C.T. refers to any aspect of information computer technology as it bears on the learning community of the school. The term computer mediated learning (C.M.L.) is also used to describe I.C.T. applications in the classroom.

I was advised to "fence off" narrow aspects of research. My questions have done this. I refer more incidentally than specifically to **video-conferencing (V.C.)** which is a major part of the CoroNet enterprise and concentrate on professional development as it impacts on I.C.T. and C.M.L. The **Gifted and Talented (G&T)** initiative operating in CoroNet schools under the direction of **Dr Paul Lowe, e-Learning Fellow** is similarly treated.

DATA-GATHERING QUESTIONS

I favoured semi-structured interviews centred on the following three questions:

1. What benefit has I.C.T. brought to classroom learning in your school?
2. Does this amount to a "new" teaching and learning practice?
3. What additional benefits are you offering, through the medium of I.C.T., to pupils who are digitally confident and competent in comparison with their peers?

These questions were addressed to the eight CoroNet Principals, their Lead Teachers and one nominated teacher in each school who had embraced I.C.T. with enthusiasm. In addition questions were put to Dr Paul Lowe, two Principals in the **Central North Island Principals' Association (C.N.I.P.A.)** region and one Auckland secondary school. Dr Lowe was an ideal interviewee as the director of a significant **G&T** initiative; the two **C.N.I.P.A.** Principals were selected for their I.C.T. expertise and their expected leadership in the region; the Auckland school was selected as a new school that was predicated on I.C.T. supported learning initiatives that fell outside conventional learning squares. I was able to include, late in my investigation, responses from a former colleague who resigned from his position as director of computer education in a regional private school that has arguably the most state-of-the-art I.C.T. facilities in the country. To range beyond the CoroNet catchment enabled me to reference where our eight schools were.

The questions, kept deliberately simple, were uncued. How they were extrapolated was important. The silences indicated where more work needs to be done.

PROCESSING OF DATA

Synthesis

Common threads were teased out of the responses. Those with marked differences were noted.

QUESTION 1: What benefit has I.C.T. brought to classroom learning in your school?

SUMMARY OF RESPONSES FROM PRINCIPALS

1. Pupil **competence** and **interest** in I.C.T. were acknowledged as significant "grassroots" factors by all Principals. Sub-points were:

    - Pupils arriving at secondary school with competencies and a **desire** to advance these.

    - The need to accommodate this pupil driven phenomenon to enhance learning.

    - The obligation to prepare pupils for a future that will require I.C.T. competence and confidence.

2. It was acknowledged that a gap existed between pupil need and the capacity to meet this need.

3. There was agreement that the gap was closing but this was more apparent in administrative practices such as computerised reporting where change was enforced, than in classroom learning where C.M.L. ranged from **outstanding practices** to **lesser practices**.

    - **Outstanding practices** reflected access to enriched information sources ("opening up the world") and fluently integrating these into lessons where engagement levels were high; platforming highly sophisticated research investigations; advancing technical skills and expertise, e.g. website development, powerpoint presentations, desktop publishing etc.

    - **Lesser practices** included the tedious use of I.C.T. resources to accomplish teaching tasks that could be done as efficiently by traditional means ("same old, same old but in a different medium") and the emergence of "I.C.T. playway" to meet popular pupil demand.

4. Principals believed that the **functional I.C.T. competencies** were being well addressed in core programmes, Text Information Management and other N.C.E.A. courses. In this regard pupils were well equipped to adapt to an increasing I.C.T. environment beyond school.

5. Reluctant elements on staff were acknowledged. One Principal referred to 10% as resistant; others estimated an upper intermediate to advanced level of competency from 40% to 60%. Only one school fell below this range (30%) and one above (75%). These broad estimates indicated an advancing level of I.C.T. **competence** and **confidence**. They may or may not fit the national survey data.

6. Every Principal acknowledged individual staff who were standouts in their I.C.T. capacities and enthusiasm. Around this core best practice was expected to spread although five Principals referred to unreasonable workloads and the potential for "burn out".

7. Unanimous concern was expressed about resourcing. Cash-strapped Boards could not afford the networking, data projectors, smart boards, write-on tablets etc. necessary for C.M.L. Providing for core requirements and administrative functions took priority. All Principals reflected a degree of frustration with the government's expectation for schools to produce **Knowledge Age** thinkers on shoestring budgets. A number of schools had significantly incomplete networking. All Principals pointed up resourcing as a real barrier to progress. While teacher laptops had been a benefit the inability to apply these in many classrooms exacerbated the problem of staff who were willing to get involved but could not be bothered to overcome the frustration of severely limited access to properly equipped classrooms.

8. Variations on "common thread" opinions were:

   - One Principal saw data software as the key to change. Excellent software would weblink teachers, pupils and the parent community by providing up-to-date academic, pastoral and co-curricular information. The "maturing of the information highway" had potential flow-on benefits for learning and would trigger other changes amounting to a "cultural shift".

   - The CoroNet **Area** Schools particularly benefited from V.C. lessons in overcoming the barrier of isolation. Most CoroNet schools saw benefit in accessing specialist, enriched niche learning. For Area schools however it was the **lifeblood for their curriculum in addition to enriched specialist opportunities.**

- Only two Principals spoke on deeper learning issues and the way in which I.C.T. could address these. Other Principals, whilst enthusiastic, reflected a more functional appreciation.

- One CoroNet Principal voiced a clear way forward. He expressed a determination to carry staff across the chasm between student engagement and a new pedagogical practice by implementing high quality C.M.L. This was a key part of his school's strategic plan. His passion and belief matched that of a classroom teacher whose views are recorded below. They represented different players on the same team.

SUMMARY OF RESPONSES FROM LEAD TEACHERS

Lead Teachers endorsed the points the Principals made – albeit with differences in emphasis – and made a few of their own:

1. I.C.T. provided access to a wider and more enriched world. **If well managed** it was a wonderful "tool of learning" which widened horizons and exposed pupils to reliable information beyond their "TV experience".

2. **Real world, real time learning** was available to teachers and learners. These examples paralleled those presented by Principals:

    - Students in collaborative groups accessing a major news story from the New York Times, The Guardian, Sydney Morning Herald and the St Petersburg Times to seek out national bias, add to their understanding of propaganda and the need to read with discrimination.

    - Economics students downloading the current trade weighted index rather than referring to out-of-date data in textbooks. Likewise geography students accessing immediate weather information facilitating interactive learning. Pupils were no longer tied to restrictive textbooks.

    - Data logging to support science investigations etc.

3. I.C.T. was a gateway to enhanced learning through **capturing the attention of learners** and **nurturing their instincts for discovery** and encouraging **life long learning habits**.

4. I.C.T. offered **efficient** and **effective** solutions to learning through **visual representations**, which helped pupils reach an **earlier and better understanding** of sometimes **difficult concepts and processes.** It was noted that many N.C.E.A. assessments relied on visual representations.

5. The context of the classroom was valued as a place in which well-managed C.M.L. flourished. While a few pupils were "cyberspace loners" individuality was best nurtured in a socially enriched environment.

6. There was an increased demand on teachers to be **better prepared** and enhance their **presentation skills**. Expectations from pupils were higher and teachers needed to **reposition** themselves as well as upskilling their techniques.

7. Astute management of C.M.L. in classrooms altered the **speed of learning**:

   - Earlier understanding through visual representation.

   - Conversely **flexibility in learning uptake** – pupils who did not **"catch on"** had the opportunity to **"work through"** material and reach understanding in their own time. Hitherto many pupils were left in **"the pit of continuing ignorance"**. Pupils not twigging to graph variations or congruent triangles could well grasp these mysteries through a hands-on programme that enabled them to move visual representations. The possibilities were endless through the astute application of software.

   - C.M.L. offered the possibility of keeping pupils together at a **"higher mean level of understanding"** accommodating different **learning styles** and **levels of ability**. Individual and class progress co-existed more easily in an environment that offered asynchronous opportunities.

8. Lead Teachers commented further on:

   - The patchy availability of resources ranging from the inaccessibility of properly equipped rooms to inadequate networking.

   - Teachers who were not advancing their I.C.T. skills because of frustrations with resourcing retained traditional, less effective methods. In some cases this was a matter of **confidence**. Teachers who were not "natives" needed encouragement.

   - An astute observation was made that the skills being developed by teachers with laptops (wisely subsidised by government) were not being transferred to the classroom.

   - It was estimated that there was a 50% reduction in the effectiveness of C.M.L .as a result of poor resourcing.

   - Low-level tasks which did not move beyond simple questions and encouraged "cut and paste" plagiarism still prevailed especially in junior classes.

9. The improved level of work presentation through tidy documents was noted. This was particularly important for boys.

10. The potential benefit of **Curriculum Faculty Groups** across the eight schools to share subject knowledge, resources, experiences and encourage learning enthusiasm through the use of the **Knowledge Net** was defined as being very important.

11. One dissenting view was the reference to C.M.L. as a process that was going as fast as resourcing allowed and proceeding at a pace which recognised the huge repository of wisdom and experience in teachers who were traditional rather than I.C.T. innovative. These teachers still had a lot to contribute. The evolutionary rather than revolutionary speed of change was deemed appropriate to carry these experienced professionals forward by way of respectful persuasion rather than coercion.

12. Paul Lowe (G & T) endorsed much of the above but added:

- Common research methods were needed across the curriculum for greater efficiency.

- Pupils needed to access people as part of their research base.

- I.C.T. resources in schools needed greater rationalisation with whole staff agreement on their shared use.

- G & T connections were impeded by mailboxes that were not being cleared!!

SUMMARY OF RESPONSES FROM CLASSROOM TEACHERS

Classroom teachers had similar responses to Principals and Lead Teachers. Some amplifications and variations were:

1. Real world, real time learning to engage pupils.

- A senior geography teacher used interactive software to teach the continental drift; downloaded images created a "flyby journey" to present regional topography and river systems.

- A graphics teacher used a **Computer Assisted Design** (C.A.D.) programme to build on the intuitive nature of his pupils in the exploration of design concepts. He mediated their journeys and influenced the outcome without compromising enthusiasm. He felt he was a co-learner and something akin to a guide giving directions only when pupils were hopelessly lost. His rich metaphors indicated an understanding beyond C.M.L. as he explained the need for pupils "to see around the bend" and assess the social and environmental consequences of their designs.

- Desk top publishing was developing as a valuable skills culture in schools.

- Pupils had the opportunity to show off their knowledge and skills (the adolescent male instinct to "show off" was usefully redirected) through powerpoint presentations to class and whole school groups.

2. A variation was expressed by a teacher whom I regard as reflective and with a vast knowledge of metacognition. His view was that whilst traditional learning had been elevated by I.C.T. teachers were only in the initial phase of developing associated thinking skills and higher level reasoning skills. The "software between the ears" needed recognition as being more important than the hardware.

Question 2: Does this Amount to a New Practice?

SUMMARY OF RESPONSES FROM PRINCIPALS

1. Four CoroNet Principals said the changes were widespread and sufficiently profound to give a qualified "yes". The qualification was important however because it centred on classrooms where there was evidence of changed learning practices and a shift in pedagogy.

2. Three CoroNet Principals described fluent C.M.L. practices as being in their infancy and this did not amount to a new practice. One Principal had an each way bet!

3. All Principals however had a strong belief that best practice would spread from the base of C.M.L. learning that had embedded.

4 The two Principals outside CoroNet believed that their schools were only "nibbling around" a new practice.

SUMMARY OF RESPONSES FROM LEAD TEACHERS

1. Lead Teachers were similarly divided but erred to the view that the descriptor "new practice" was as yet inappropriate. They had detailed views around this reservation:

   - Fluently integrated C.M.L. had not spread widely.

   - There was no deep understanding of associated teacher and pupil thinking practices.

   - In some cases C.M.L. embellished traditional teaching ("same old, same old, with new bells and whistles", "expensive poor teaching").

   - C.M.L. had barely started to shift learning from **transmission** to **transformative** modes.

2. There was however a strong belief in the potential of C.M.L. to progress through this transitory phase and for a **new practice** to become **standard practice.** High pupil expectation was perceived as a strong driver.

3. New practice was impeded by gaps in I.C.T. resourcing. Filling these gaps was deemed essential.

4. Paul Lowe (G & T) described current learning practice as not so much "new" but more "diverse". I.C.T. resources and tools had improved learning but thinking skills were slow to change. If pupils were proactive in responding to **problem solving challenges** a reasonable shift in thinking could be expected. (The G & T programme had a strong problem-solving base.)

SUMMARY OF RESPONSES FROM TEACHERS

1. Teachers erred on the side of a "new practice" emerging in CoroNet schools by five to three. This was not surprising as they were selected as C.M.L. enthusiasts.

2. There was a belief within this group that C.M.L. practices extended traditional methods and helped pupils in the construction of learning and openly sharing this.

3. A child centred methodology supported by C.M.L. was emerging.

4. Only one teacher referred to the need to investigate pupil thinking and a C.M.L. pedagogy to a deeper level.

Question 3: What additional benefits are you offering, through the medium of I.C.T. to pupils who are confident in comparison with their peers?

SUMMARY OF RESPONSES FROM PRINCIPALS

1. Every CoroNet Principal viewed the **existing structures** within the school as being important in providing for the needs of the **confident** and **competent**:

   - Core programmes in the junior school (in Area schools – the middle school) to platform later success.

   - Research projects and presentations etc. within existing class programmes.

   - Extensions in the senior school within the framework of N.C.E.A. - website development, curriculum vitaes, Photo-Shop, Office, computer programming etc., and of course **more passes with Excellence**!

- Established school expectations and practices, eg. desktop publishing preparation of the school magazine, computer clubs, internet café etc.

2. Few Principals expanded on **the needs of individuals** (as compared with **structures**) who were deemed confident and competent:

   - There was **little identification** of the confident and competent beyond the selection of candidates for the G & T programme.

   - It was acknowledged that some competent and confident pupils emerged under happen-chance circumstances. The possibility of a pupil with prodigal abilities being overlooked was real.

   - Several Principals acknowledged the need for **independent learning programmes (I.L.P.'s)** to identify those with advanced abilities. One Principal believed improved database software assisted in more accurately profiling these pupils.

3. One Principal offered the perspective that I.C.T. abilities were no different from others – art, music, drama etc. – and had to fit the school's reasonable capacity to satisfy a variety of gifted students.

4. There was a belief that as staff improved their I.C.T. competence and confidence pupils who were gifted would be more readily identified and extended for the benefit of the whole class, including the teacher. A new teacher-pupil relationship was articulated by several Principals in this context.

5. Schools where there was a high use of V.C. were aware of confident and competent pupils who were unrecognised in conventional classes. It was important to identify and extend their abilities in this learning medium.

6. There was enthusiastic and unanimous support for Paul Lowe's G & T programme to extend able pupils although difficulties around the selection of this group were voiced.

SUMMARY OF RESPONSES FROM LEAD TEACHERS

1. Lead Teachers also identified the scope within existing structures for confident and competent pupils to advance their knowledge and skills. However there was a heightened awareness of the neglect of these pupils:

   - More systematic and refined systems of identification needed

   - More teacher resourcing to monitor and mentor these pupils needed

- The existence of unrecognised “misfits” and a lack of understanding of what they knew (self knowledge/prior knowledge) was acknowledged.

- The need for formal programmes with clear outcomes, especially in years 9 and 10. N.C.E.A. provided more structured opportunities, eg. T.I.M., computer programming, website construction etc.

2. Informal opportunities for able pupils were seen as important, e.g. pod casting, lunchtime website design etc. One school had a radio station that depended on pupils with appropriate computer skills.

3. Improved teacher confidence and competence to keep up with pupils and enhance personal relationships were defined as being important.

4. Phil Buchanan, CoroNet’s knowledgeable Project Director, amplified a list of web-connected opportunities available to extend the able.

5. Paul Lowe (G & T) emphasised the need for systematic identification of talent and the need for teachers to occasionally set aside old models of learning and promote new approaches such as problem solving based learning. His view that many teachers could not be bothered because such approaches were too much trouble was shared by several Lead Teachers. Another Lead Teacher simply said teachers needed to learn to “let go” [of traditional methods].

6. One Lead Teacher was aggressively specific in targeting work overload and patchy resourcing as barriers to progress.

SUMMARY OF RESPONSES FROM TEACHERS

1. Teachers reiterated the views of Principals and Lead Teachers but one enthused classroom teacher believed our inability to respond to the I.C.T. learning needs of competent and confident pupils exposed **deficiencies in the profession**.

2. Teachers were more outspoken than Principals and Lead Teachers about the need to:

- Better identify different learning styles and the need for I.L.P.’s.
- Open up learning that was “closed” through the use of C.M.L.
- Rescue competent and confident pupils who were languishing.

3. Competent and confident pupils were well served by advanced V.C. teachers who provided concentrated and controlled opportunities to connect pupils to learning sites that enthused further learning. Their monitoring (and mentoring) was a **model for general classroom teachers.** Good V.C. teaching was a "concentration of best practice" because the teacher had to be well prepared to "get it right in the one hour", engage pupils at a distance and have well organised tasks to consolidate previous learning and prepare for new learning. **The time-distance factors** extracted the best from these teachers.

4. The most impassioned vision expressed by a classroom teacher deserved paraphrasing in detail:

"I.C.T. has liberated learning. Just as the slide rule was replaced by the electronic calculator, computers have quickened the learning process and the "freeing up of time" has resulted in:

- *Powerpoints to free up oral presentations.*
- *Publishing skills to improve presentation.*
- *Word processing to assist revisioning.*
- *The internet to allow pupils to discover in depth, satisfy their curiosity in areas of interest and become their own teachers.*

***This is promising only if teachers are open to it**. It is like breaking in a wild horse – it has powerful potential but it needs to be gotten under control and directed.…..*

The expansion of this vision should be the passion driving teachers. I.C.T. holds the key to "scaffolding the chasm" between the innate ability of pupils and their ability to demonstrate it[through their learning] with confidence.…..

*In pursuit of this passion **teachers have to be better learners** so that they can emphathise with their learners to "fire them up". Teachers have to change **how they learn** and change **how they teach**. This **is the real shift** that is needed to change pedagogical practice.…..*

*Whilst it is great to target our most able learners we need to target "second tierers" as potentially competent and confident learners **if given the chance**. Well managed I.C.T. learning may be the **main chance** for "second tierers".*

These views resonated those of one CoroNet Principal who said that the successful teachers using C.M.L. were the ones who were prepared to get "down and dirty" with their pupils.

PRELIMINARY CONCLUSIONS ON DATA GATHERED

In spite of the variations common denominators emerged:

1. The advent of C.M.L. "driven" by digitally conditioned pupils, was a major, exciting and irreversible challenge.

2. Schools were uneven in their response to this challenge. Whilst advanced practices existed there were embedded lesser practices that resisted change. Progress was patchy but the gap was closing between the needs of learners and the ability of schools to meet these. **The gap within schools was generally greater than between schools.**

3. The lack of comprehensive resourcing was seen as a real barrier and curiously out of step with the "laptops for teachers" programme. Classrooms equipped with data projectors were essential to C.M.L. Teachers who were tentative needed every encouragement.

4. All schools were strong in the teaching of **core functional I.C.T. competencies** to equip pupils personally and vocationally. However C..M.L. across the curriculum, generating higher order thinking and applications, lagged behind.

5. There were common understandings but also differences in perception between Principals, Lead Teachers and the selected teachers interviewed. Principals had a broader, optimistic view in keeping with the "stewardship" of their schools. Lead Teachers and teachers were more in touch with the details of implementing C.M.L. They were closer to the action.

6. A strong collegiality existed between CoroNet Principals. This was replicated by Lead Teachers and enthusiastic classroom teachers participating in the Curriculum Faculty Group initiative. There was however an absence of **a shared vocabulary** to articulate issues. The need for **a common language** regularly used to reinforce relationships and promote objectives was apparent.

7. Schools were still grappling with strategic issues to accommodate a rapidly changing learning environment. I.C.T. was not the **only** factor in this but it was a **major** one.

8. There was unanimous acclaim for Paul Lowe's G & T initiative where pupils were organised into problem solving teams (**PROBLIT**). A value added benefit emerged: the anticipated success of this initiative was expected to generate parallel programmes across the curriculum in 2007 involving a wider pool of identified talent. It was interesting to observe that I.C.T. was regarded as an **incidental tool** in this **collaborative** exercise.

9. There was an expressed frustration (but also a philosophical acceptance) of the myriad of issues that bear on a school day and detract from the core business of learning. Ironically I.C.T. efficiencies created space for more issues to be resolved and had not reduced workloads!

10. My interviews and discussions affirmed three pivots of change: **mechanics, method** and **mind.**

(a) **Mechanics:** Mechanics refer to the hardware, bridging, file servers and other technical paraphernalia right down to the computers that teachers had to manipulate beginning with "how do I turn this bloody thing on". When systems crashed someone "fixed it." Kiwi ingenuity was alive and well! A pragmatic, hands-on savvy had developed to save money and enable schools to carry on in the event of a crisis. Professional development had advanced teacher confidence and competence in managing the mechanics.

(b) **Method:** Blended learning where C.M.L. was fluently integrated was an emerging "best practice". It was evident that learning boundaries were slowly shifting from **transmission** to **transformative** modes and the use of C.M.L.to **retrieve** information was becoming a pre-step to **constructing** new, authentic (sometimes creative) learning.

(c) **Mind:** *The mind game is the end game.* C.M.L. mediated learning was appreciated by all schools as a tool to enhance learning but it was apparent that we knew little about the **"software between the ears**".

The second part of my investigation explores **method** and **mind** as important **pivots of change**.

MATCHING PRELIMINARY CONCLUSIONS AGAINST THE LITERATURE

Introduction

Ideas drive change. Ideas are a response to, or consequence of, real world situations. It is this interplay that drives further change. I later refer to this as a **dialectical** process.

This aside is relevant to **method** and **mind** as important strands of thinking. **C.M.L is a response to the pervasive influence of digital technology that goes beyond the functional competencies and enters the realm of diverse and better ways of learning.**

I am grateful to have accessed **selected** literature at the University of Waikato. The word selected is important because there is too much to absorb. You have to nail your colours to a few masts to avoid an early demise.

In matching the literature against what schools told me important questions emerged:

- How well is **blended learning** understood in its practice?

- How well is software applied as a tool in resolving **targeted learning difficulties** in a way that adds to our understanding of learning?

- Is it **valid** to use the terms **e-learning and e-teaching**?

- How does C.M.L. fit the **purposes** of this country's education system and the **personalised needs** of its learners?

The literature helped in addressing these questions but silences where more work needs to be done were important too. I have tried to identify a few. **Method** and **mind** are recurrent ideas as well as the view that I.C.T. **as a catalyst of change has exposed strengths and weaknesses in our profession.**

The Literature and Important Focus Questions

How well is blended learning understood in its practice?

Any learning that incorporates more than one element or approach is **blended learning**. However since the late 1990's in the U.S. blended learning is synonymous with computer mediate learning (C.M.L.) to make learning more diverse and engaging. As blended learning becomes common, the term will be dust binned and learning as a word will once more be sufficient.

The Handbook of Blended Learning edited by Curtis Bonk (an unforgettable name) and Charles Graham amplify a variety of effective blended learning models. The six authors believe the rich array of e-learning opportunities have consistently shifted learning from a shallow to a deeper process recognising the benefits of various blends supporting collaborative enterprise and individual programmes.

Two contributors, Mike Wenger and Chuck Fergusson, describe this as a "learning ecology" where no one mix is appropriate. Teachers must develop their own mix, often by trial and error.

The authors provide deeper explanations as to why C.M.L. is the way of the future but emphasise the need for a carefully planned curriculum design with clear ideas around what C.M.L. interventions are intended to achieve.

The difference between Bonk and associates and what is happening in CoroNet classrooms where best practice exists is that whilst C.M.L. processes are valid there is little explanation of these. Here are three snippets from these academics by way of example:

- ***Multiple Perspectives on Content:*** *Learners are a varied group of individuals who have a varied set of learning styles. They seem to achieve higher mastery of content when they make multiple passes through material and deal with it through different learning processes.*
- ***Cognitive Rehearsal****: A process by which learners master newly presented material by talking about content…..*

- ***Context is More Important than Content****…. Learners have an incredible thirst….for context – the unofficial, peer driven or teacher driven view of the authored content…..a story about how the content "fits" is what people remember.*

As important as C.M.L. is in the process of blending the authors are mindful of learning as a primal social process where traditional face-to-face explanations from teacher to learner are still an important part of the "mix".

Gilly Salmon is a Director of the Open University in the United Kingdom, one of the world's largest providers of distance learning. In her book **E-Moderating: The Key to Teaching and Learning on Line** she draws on her considerable experience as a trainer of V.C.instructors to define C.M.L. learning behaviours that are transferable to conventional classrooms. She identifies learners as a mix of the active, the practical, the theoretical and the reflective and devises strategies accordingly. I was intrigued with her notion of "lurkers" – those who sit on the edge of any learning group for whatever reason – who are a challenge to V.C. providers. For classroom teachers too!

Again the literature adds to a deeper understanding of current best practice

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How well is software applied as a tool in resolving targeted learning difficulties in a way that adds to our understanding of learning?

Software Goes to School: Teaching for Understanding with New Technologies : Edited by David Perkins and associates, is a revelation for teachers interested in metacognitive processes that link with C.M.L. models. Reading this book reinforces how little we know about learning and understanding and how great the potential is to resolve targeted areas of difficulty that have been tripping up pupils from time immemorial.

Perkins and associates are American academics who grapple with the problems of learning especially in mathematics and science by using virtual representation models to make what is mysterious and daunting understandable to a wide range of learners.

They are at ease with C.M.L. in the provision of solutions and they demonstrate a profound understanding of the learning processes and construct a language around this. Neither do they lose touch with the basics of good teaching that support learning. I have paraphrased some snippets:

There is a tripod of concerns [in using technology to foster understanding]:

1. *The general challenge of teaching and understanding.*
2. *The use of the newest instrument available to support human thinking – the computer.*
3. *Learning is best to unfold in a setting that, although often vexed and always taken for granted, constitutes one of the most foundational inventions of contemporary civilisation: the classroom!*
   …technology is a tool to be used selectively…..aligned on pedagogical interactions that are likely to build learners' understanding and stimulate interest.

They also create an interesting context for those who live in the 21st century:

> *The average person today understands more of the world than the average person a few centuries ago BUT the average person has greater areas of no understanding about things that surround his daily life: artefacts, radios, TVs, microwaves etc.*
> *…..most people today witness more phenomena they do not understand than their predecessors….*
> *….if literacy were defined as the ability to read comprehensibly all of us would be considered illiterate in many or most areas of human knowledge….*
> *…..modern technology offers through representational media the opportunity to acquire knowledge….and enhance understanding [in fields in which we have little understanding.]*

To Perkins and associates all teachers should start with the basics of the **Five Principles of Fostering Understanding**. (NB: **Fostering** understanding is not **guaranteed** understanding!!)

1. Start where the student is. (Prior knowledge.)
2. Promote active processing and discovery.
3. Use appropriate representation models.
4. Use simulations.
5. Provide a supportive environment.

The best practice in the schools I investigated would indicate these principles to be alive and well but the processes that underpin them in respect to deeper learning are less understood such as:

> *"pop up" knowledge as compared with "dig out" retrieval;*
> *"catching on" as compared to "working through";*
> ***affective** or emotional based knowledge as compared with **cognitive** or formally identified knowledge.*

The writers in pursuing the paradox that we do not "understand" understanding very well and yet there is a primal need in every pupil to "understand", endeavour to explain how C.M.L. using the best resources in the best hands can explicate many mysteries.

Thus cell mitosis or the supernova explosion can with dynamic and interactive representation be readily understood. How it is contexted is quite another matter.

Where CoroNet schools are strong in touching base with Perkins and associates is in **discovery learning** with its problem solving dimension, evident in the G & T enterprise and other best practice C.M.L .described in the first part of this investigation.

> *Students need to engage in extended problem solving in a domain in order to assimilate new facts and ideas or rearrange knowledge….[leading on to] profound thinking.*

This is encouraging and Paul Lowe's G & T cohort in following the learning design of **Problems are the in the Solution** (which also includes an excellent chapter by **Jamie McKenzie** titled **Questioning Toolkit** – a much neglected area) is in step with this thinking.

I reiterate the view that best practice and understanding the processes that underpin best practice are two different levels of pedagogy. Best practice needs to be better supported by readily understood processes.

Is it valid to talk about e-learning and e-teaching?

It is my view that learning is superordinate. E-learning is an extension of best practice where **mechanics, method** and **mind** align. It is an advanced dimension using the medium of I.C.T. Equally it can fall into lesser practices as elaborated by Jane Healy in *Education Leadership, 2000, No. 2*, when talking about education versus "edutainment". Bending to popular demand in a well-resourced computer room is very tempting last period on a Friday. Soft consumerism can quickly displace rigour. The point is that good learning precedes good e-learning as much as poor learning precedes poor e-learning. The fundamentals of good learning must be in place for e-learning to achieve to its maximum.

R.S. Peters, a Professor of Educational Ethics at London University defines the fundamentals that still wear well. He describes learning as a concept that when linked formally to education is at its best when not inert but active as a transforming process whereby a wider set of beliefs enable problems to be tackled in a "rigorous and competent manner". Education is about "leading out" pupils to new understandings. It is also about "a new authority" whereby the teacher and the pupil become co-learners. Whilst the teacher must retain a command position he/she is a true teacher in that moment when any pupil teaches him or her something that is authentic, new learning. This is the moment of intersection when teaching and learning become inseparable. This shift from being **authoritarian** to being **authoritative** in a shared learning environment is a difficult one and has implications especially for young teachers learning their craft.

While Peters wrote in the 1960's his ideas relate easily to what Perkins and associates are achieving through C.M.L. His urging of teachers to re-position themselves in relation to their

pupils and his notions of shared learning and self-motivated learning preceded computers by nearly 40 years.

Best practice C.M.L. will always exceed sound traditional practice but it will never displace it.

CoroNet teachers who are presently demonstrating best practice are able to articulate some of these issues but there is too little reflection rather than too much. The debate has too many metacognitive aspects for busy staff but it does have a bearing on **future learning where C.M.L. will become the norm not the exception.**

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How does C.M.L. fit the purposes of this country's education system and the personalised needs of its learners?

The fundamental purpose of learning in CoroNet schools is curriculum delivery. There is a hierarchy of values in which the upper levels are decidedly influential. A key measure is the success of students preparing for tertiary education and when they gain entry into say medical or engineering schools there is reflected pride. From the upper levels we adjust downwards to the junior school to pre-step curriculum delivery with an end point in mind. There is a logical sequence.

The examples of medicine and engineering are selected deliberately because the political establishment would deem them to be among the "necessary professions" – necessary for this country's immediate human and material needs. The point is that we teach to curriculum models that are about gaining qualifications. **Many individual learners get lost along the way.**

C.M.L. does not necessarily play a part in this. One of New Zealand's most successful state schools has virtually no I.C.T. framework on which to platform such learning. Across the city a private school where all pupils carry P.C.s achieve equivalent but not better results. The inference could be drawn that computers and C.M.L. make little difference. Curriculum delivery by traditional or innovative means still dominates our education system. It is not **curiosity** but the need to **succeed in examinations** that is the key driver of our nation's learning.

There are voices raised against this position. Jane Gilbert's landmark **Catching the Knowledge Wave** amplifies the view that our schools are mired in outdated industrial models unsuited to New Zealand's needs as a new knowledge age society capable of competing in a world where knowledge, and its application, must be versatile and diverse to foster economic success and social cohesion.

It is an engaging book. Her opening stanzas in which she presents two biographies of I.C.T. gifted pupils who were alienated prompted my research question on competent and confident pupils. But her centralising and compelling metaphor which reveals her background as a biology teacher relates to **clades** and **clones**. She writes:

A clade is an organism that has the capacity to develop in any number of different ways. A clone is an exact copy of its parent organism….it has no means of adapting to the new environment. Clades are the foundations of great leaps forward in evolution, while clones are evolutionary dead ends. For biologists, clades represent diversity, dynamism, innovation and ongoing life, while clones signify conformity, constriction and eventual death.

Dr Gilbert is trying to tell us something!! Her critical gaze extends to I.C.T. and the inference that I draw is that we are deluding ourselves if we think that I.C.T. in its present form is making the difference that we think it is. She summarises:

Because education's purpose is to prepare people for the world they live in, it must be future-focussed. The current approach to I.C.T.s in education is not future-focussed, and nor is it especially innovative. Rather, it is an "old knowledge" strategy, designed to recapitulate the world of the past rather than lay the foundations for the world of the future. In the end, it will fail. What should we do instead then? How can we think about education in ways that take account of the new orientation of knowledge and identity? The good news is that we don't have to start at square one. Out there in specialised corners of educational research, are people working on those questions right now. The not so good news is that their ideas aren't widely known among classroom teachers, and because they represent a major mind shift in how we think about education, it will probably be a while before they are understood. However, it is through these ideas, and others like them, that we will be able to build a genuinely future-focussed system."

CoroNet schools are on the edge of this "mind game" (remember the end game is the mind game!). There are signs midst the best practice I investigated that C.M.L. has progressed beyond efficient ways of delivering old information and the indiscriminate use of readily accessed information to enter into genuine learning contexts created by imaginative teachers. Dr Gilbert might be impressed by what is happening in some CoroNet classrooms however I take her point that we are at the beginning of a long journey.

Dr Gilbert's views are compelling and my challenging them would be akin to entering the boxing ring with Anthony Mundine with one hand tied behind my back. However the information literacy programmes (functional competencies) that she criticises are adjusting thousands of pupils into the work place where these are in demand. Pupils are better prepared for the world beyond school. This is not higher ordered thinking that is likely to lead to **eureka** breakthroughs of "new knowledge". Nevertheless it is fostering economic and social cohesion in niches at every vocational (and personal) level. The "butchers and bakers and candlestick makers" in an I.C.T. world are those who will run small businesses, drive trucks with computerised logs, pay their bills on the internet etc. CoroNet schools can take pride in their contribution. Dr Gilbert would, I think, be dismissive of this view.

Dr Gilbert whilst criticising Plato's continuing elitist influence in schools falls somewhat into the same trap. One CoroNet classroom teacher who has a deep understanding of metacognition estimates that only **12%** are able to fully utilise the benefits of C.M.L. leading to the deeper, diverse and more versatile knowledge bases that Dr Gilbert advocates. His

view is that there is a **second tier** of learners who are capable of becoming first tier learners **if given the chance.** There is no argument that there is little understanding of the learning processes that would help explicate Dr Gilbert's "new orientation of knowledge and identity". Eureka thinkers often surprise because of their unexpected backgrounds reinforcing our ignorance on how little we know about learning, thinking and understanding. CoroNet schools are providing I.C.T. contexts in which such individuals could well surprise us.

I was able to interview a pupil who had developed a simple software programme that is now used in a primary school. Like Dr Gilbert's prodigies described in her opening chapter, he developed his programme unaided (except for the influence of his twin brother) and his versatile and diverse knowledge is now of benefit to new entrants. This pupil is struggling with aspects of N.C.E.A. English Level One. However he is a clade thinker!

A greater personal good is emerging too. Presently there are older people who sit on the wrong side of "the digital divide" unable to be independent and self-sufficient in such things as internet banking and other functions that would improve the quality of their lives. There would be few, if any, pupils leaving CoroNet schools who would be similarly disadvantaged and disempowered.

Another voice raised is that of Jeremy Kedian who, in his article *School transformation: Basic tensions* in Education Today 2006, No. 6, argues that there is a tension between **form** and **function** and that **form** is presently winning. Schools are effective in organising efficient systems that deliver the curriculum in tightly prescribed ways. However the core **function** of schools is to **foster learning, not to guarantee it in the form of results,** examination or otherwise. If this is to occur at a deeper and more meaningful level there must be a move towards personalised learning. This view would be consistent with Dr Gilbert's who emphasises the need for new contexts in which diverse and versatile learning can be fostered. Jeremy Kedian's suggestion of personalised pathways would likely find qualified support from this quarter.

In the course of my research I had the opportunity to investigate the **form versus function** tension in a newly established Auckland secondary school endeavouring to think outside the square. Their curriculum is sliced into interesting concepts to investigate such as "change and who cares?" Pupils work in learning teams around pods of computers which are important tools, although not the only tools of learning. Concepts straddle traditional discipline boundaries and teachers work in cross curricular syndicates. Transference of ideas between disciplines is given importance. Pupils work in teams for 100-minute periods and term programmes are interrupted by three-day events focusing on a pre-arranged project. At Year 9 pupils have learning immersion days. E.R.O. had some difficulty in appreciating the learning design! The school is now entering into N.C.E.A. and the community expectation is for success validated by results, not the learning that preceded. The years in the junior school are about **function** and while there is some flexibility in personalising pathways in N.C.E.A. programmes the emphasis shifts to **form** especially for the able who are directed to qualification specific learning. Traditional examinations have been introduced to give the pupils practice and to ease the concerns of parents. It will be interesting to see how the **form** versus **function** tension plays out.

There is an **embedded inertia** in New Zealand education called the **Qualification Framework** which closely links with the tertiary sector. This is the prime determiner of our current learning model. Schools are obligated to do their best within this model. It is critically influenced by the needs of the political establishment; teacher views are muted or set aside. Those who propose that **form** should follow **function** are in a position of minor influence. However there are signs that the **locus** is shifting. This is evident in the ideas of the authors reviewed here and in the moves towards personalised learning which link CoroNet schools with what is happening in Western education systems. I.C.T. plays an important part in this initiative.

Greater personalised learning beckons. It is aided and abetted by I.C.T. Sophisticated database software can store and retrieve the results of calibrated testing and provide detailed profile information on each pupil. What we do with this information is critical. Does it gather dust or is it used to create an **independent learning programme** (I.L.P.) for **each** pupil? This is a challenge for weary, over-committed schools but nevertheless in the interests of equity and/or justice it is a proposition that must be examined. The status quo suggests I.L.P. attention is reserved for the very able and the less able. The muddle in the middle survive often in spite of their learning experience not because of it. All sorts of rationalisations are built around this latter group including platitudes about independent learning habits, self motivation, "roughing it" is good preparation for university etc. **In fact the learning of many individual students is being left to chance. If learning is the core business of schools** this problem needs addressing. Personalised learning, not just personalised pathways of learning, needs an "arm wrestle" of thinking sufficient to justify a separate investigation.

Personalised learning links closely with our need to know more about what makes learning and learners tick. Metacognition is a taboo word much like sex was in Victorian England. It is not much talked about and sits uncomfortably within CoroNet's culture which I suspect reflects a national position. It is partly about time for busy teachers to reflect. It is also about **inhibition** because talking about metacognition is an introspective process in which we must talk about our emotions as they relate not only to pupil learning but to our own. Effective learning involves emotional or affective engagements that build cognitive or formal understandings. It is a very personal thing. As a result of this inhibition what makes learning and learners tick is one of New Zealand's best kept secrets and is, I believe, a barrier to change. Pupils are very interested in unlocking this secret because they each have a primal need to understand. This is a lifelong impulse and particularly evident in adolescents whether they acknowledge it or not. I.C.T. and C.M.T. are important in bridging the gap between the desire to know and understand something and the capacity to absorb that understanding to a point where it can be demonstrated or explained to a teacher, assessor, examiner, Mum and Dad or other learners. Self rehearsal is vital in reinforcing understanding and boosting confidence in learners of all stripes.

We must learn more about learning, understand more about understanding and think more about thinking to a point well beyond the annual exam season "magic of memory" courses offered in many schools. C.M.L. is important in assuring pupils about their metacognitive processes: why some information "pops up", why other information has to be "retrieved" by

"digging out"; some pupils "click on", others must "work through" to achieve understanding. A simple mathematics analogy would be the "grasshopper" entity thinker who catches on to a whole concept quickly as compared to the "inch worm" thinker who is less intuitive and more sequential in thinking processes. The inch worm can often, by "working through" a problem and repeating exercises, commit enough to working memory to reach a modicum of understanding. How many Mathematics teachers talk to their pupils about such things beyond repeated homilies that advocate persistence without the metacognitive explanations that would enhance confidence and eventual performance? If I were to expand I would refer to Perkins' view of **Epistemic Knowledge** (EK). Students need constant E.K. to build explanation structures. By "epistemic" we mean the "rules of the game" that operate in a domain of learning to help the mastery of that learning. E.K. is the necessary scaffolding in all domains of learning and it can be as functional as rules of thumb or have deeper metacognitive dimensions.

Digitally conditioned pupils arriving at our schools are developing their own kinds of mental agility and thinking patterns. These can be mediated into new learning, C.M.L. or otherwise, if teachers spend more time on what should be a core part of their practice – metacognition. I believe new thinking paradigms driven by digitally conditioned pupils require special attention. And soon! The April 10th issue of Time addresses this matter in an article *Are kids too wired for their own Good?*

There is literature to assist in a better understanding of metacognition. Gardner's defining work on multiple intelligences has been around since 1983; De Bono's **Six Thinking Hats** since 1985. Both wear well as a start point to get inside understanding. Art Costa's ideas are useful although I prefer De Bono's explanations which I believe are more pupil friendly. **C.O.R.T.** or the Cognitive Research Trust is another recommended resource. Professor West-Burnham's paper **Understanding Learning** is a readable, short compass reduction of a complex subject to understandable wisdom. There is a lot out there. I have nailed my colours to the De Bono mast but for a readily accessible anthology of "thinking gym" exercises Anne Sturgess' **Virtual Thinking** is recommended. Her programme was implemented in a local boys' school with some success and points up the need to teach thinking skills as a separate or integrated part of the curriculum to enhance learning. I believe the integrated approach to be the best for enhancing learning in the subject being taught.

Getting inside understanding is not, I believe, a high priority in CoroNet schools. There is a need, as suggested in my preliminary conclusions, to build an easily understood language around what makes learners and learning tick. Metacognition as a word is too esoteric, belonging to the initiated few; it should be in common use revealing shared insights into learning and learners if we are to seriously play **the end game – the mind game**.

WHERE TO? DIALECTIC, DIALOGUE AND THE NEXT BIG PUSH

History is in the state of flux; change is the constant ("one damned thing after another"; "shift happens"). The status quo is constantly under challenge by way of modification or sweeping

change. Education is no different. As in history so it is in education that the dialectic or flux is a tension between **continuity** and **change**. Continuity supports the traditional position; change the innovative. The outcome is a blend that becomes the new status quo that is challenged and the cycle repeats. Thus constructivism is soon succeeded by post-constructivism. Dr Tom Brown in his article ***Beyond constructivism: Exploring future learning paradigms*** in Education Today, 2005, No. 2, points up **information navigation** as the next phase building on constructivism. And so the process goes on and on.

Change can be a good thing in testing the validity of the status quo but too much change in quick succession can be destabilising.

There is a flood of literature around on how to manage change. I advise Principals to select **one or two** gurus to help direct visioning, strategic planning and associated professional development. Highly recommended are Professor Louise Stoll, Professor Thomas Guskey, Dianne Peck, Professor Art Costa, Professor West-Burnham and George Otero. Professor David Hargreaves and associates offered a new approach as part of their recent launch of iNet to regional schools. I have yet to fully absorb what appears to be very workable rubrics and approaches to managing change. CoroNet schools should take note of what is on offer. Phil Buchanan has material from these sources on file.

For my money a good start point is Peter Senge. His book **The Fifth Discipline: The Art and Practice of the Learning Organisation**, 1990 is based on his experience in turning around Dutch Shell from a poorly performing corporate to a successful one, centred on an important key idea. To his litany of **Systems Thinking, Personal Mastery, Mental Models** and **Building Shared Vision** he added a fifth- **Team Learning**. What he has to say about **Team Learning** is essential to managing change in schools:

> *Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organisations This is where "the rubber meets the road"; unless teams can learn, the organisation cannot learn.*

Senge also advocated the importance of "dialogue" which he defines as:

> *The capacity of members of a team to suspend assumptions and enter into genuine "thinking together".*

Dialogue as "*thinking together teams*" is where change management begins. Schools are tricky places to build such teams because of the diversity of views – often ego driven – on what learning is about. Senge levered Royal Dutch Shell to success because "profit" is a readily understood word whereas 'learning' is a concept which has many different meanings. Nevertheless it is on this foundation that change management is built.

The beauty about dialogue is that it is not win-lose as in discussions but a process of constant revisiting, rearranging and clarification. It is time consuming but it eventually produces something close to a substratum that can be understood across the whole group. It is these **deeper, shared understandings that springboard successful change.**

CoroNet Principals are already a strong dialogue group capable of fulfilling Senge's ideas in their schools where "thinking together groups" already exist.

I have some cautionary words. Whilst change management varies in each school it flourishes where dialogue centres on issues that are identified by staff as being important to learning. While the Principal needs to have oversight of "team thinking groups", he or she needs to avoid imposing tight directives. The dialogue process is not a Nuremberg rally. If the benefit is for the learning community that is the school, valid priorities will be defined. If the process is over bureaucratised enthusiasm will be lost. It is a fine line between **informality and formality**. The former can result in expansive talk fests without purpose; the latter can result in participants being "committeed out" and a subsequent loss of enthusiasm. Dialogue needs careful management to keep visions alive and refine useful conclusions. Grand strategic plans are sterile pronouncements if they are not preceded by processes that enshrine the residual wisdom of "team thinking groups". They represent the point of "buy in". If the strategic plan does not capture the hearts and minds (imaginations) of the individuals who make up the organisation it will fail. It must focus on learning not on elaborate institutional/committee systems. For example to create lifelong learners is a laudable strategic objective but it must be preceded by a lot of dialogue about what makes learning tick and how this can best be fostered. Getting inside learning – a resonating idea – would seem to me to be an essential pre-step to wider visioning and strategic planning. **Simple structures built around agreed metacognitive understandings are the lifeblood of successful strategic planning for learning.**

Whilst there are variations on Senge's wisdom in CoroNet schools I was impressed in my dialogue with Principals and selected staff on the degree of "buy in" around the benefits of I.C.T. and C.M.L. While much needs to be done the willingness of staff to enter into change processes is very strong. Dialogue cultures are to be valued at whatever level they are entered into. They need constant nurturing and whilst there are necessary cut-off points the process is a never-ending stream as new challenges beckon. **The influence of the Principal is critical;** because he or she cannot do everything the art of **"distributed leadership"** assumes paramount importance.

As mentioned earlier the new challenge is personalised learning, be it personal pathways for more closely defined cohorts of learners or **independent learning plans (I.L.P.s)**. The **mechanics** and the **methods** are at hand to provide detailed profile information around which calibrated strategies can be built to benefit individual, group and teacher learning. I.C.T. and C.M.T. will aid and abet this enterprise. We have yet to get our **minds** around it. **It is the next big push.**

SUMMATION AND FINAL THOUGHTS

I offer some views in the context of the three research questions and final thoughts to former colleagues.

1. The benefits of I.C.T. have flowed into many CoroNet classrooms in the form of well

constructed V.C. lessons and fluently integrated C.M.L. Learning is being significantly advanced. The beacons of best practice must light the way into all classrooms. I am a strong believer in **imitation as a potent force of change.** This must be encouraged to "even up" the quality of delivery where C.M.L. clearly offers distinct advantages. I reiterate the point that the differences within each school are generally greater than between schools.

2. To talk about a "new practice" is valid only with qualifications. Principals should not be disheartened. Change does not happen evenly or reverently. Progress is not a gently rising curve to the sky. Serendipity gives way to glacially slow incremental steps punctuated by frenetic bursts of activity. It is in the nature of things.

3. I.C.T. competent and confident pupils are being accommodated to a point but more needs to be done for those who are prodigal or differently abled. This will involve better processes of identification and the personalising of their learning. Pupils have always languished in our schools. The next big challenge is to cast the net wider to catch more learners and engage them through the astute use of I.C.T. Schools may have to change the form of delivery. Cohorts, classes, timetables, length of periods etc. will be very different in the future. If V.C. seems innovative now imagine what schools will be like five years hence!

If I was to identify the most significant "silence" in my investigation it would be **boys' education.** Boys are more instinctual learners. Testosterone flooding (a touch of wistful nostalgia here) can be the recipe for distraction and surly under-achievement. It can also be the recipe, if astutely managed in C.M.L. environments, for boundless exploration and high success. It may be something to do with the need of boys for greater "hands on" in their learning. The computer as a tool satisfies this need. It is a possible area of catch up in reducing the gender gap. Around this hunch (or prejudice) some serious research needs to be done. It also links with personalised learning initiatives.

My penultimate comments are for colleagues who pursue CoroNet goals as well as running busy schools beset by daily frustration, trivia and rubbish. Hang on to your bedrock belief that teaching may not be the world's oldest profession but it is the most important. Professor Peter Ellyard in his address to the S.P.A.N.Z. Conference 2006 used the word "heart" to describe teaching and learning as a process that is more than cerebral. It is a primal need on which our future hinges. Social cohesion is possibly a euphemism for holding the thin line between civilisation and anarchy. The events in the Solomons and East Timor are timely reminders.

The other important bedrock belief for care worn Principals is that, in spite of its tedium and reversals, life is about exploring a vast adventure park. Impress this on your pupils; impress this on yourselves. The last term of my professional life has been another such exploration. I thank you for your support during this time and wish you the very best in your future endeavours. Some magpie, some P.

Kia Kaha
Dave Douglas

References

Publications:

Bonk, C. (Ed.). (2005)	***The Handbook of Blended Learning.***
Brown, T. (2005)	***Beyond Constructivism***: ***Exploring future Learning paradigms. Education Today,*** *Issue No. 2.*
Healy, J. (2000)	***Education Leadership,*** *Issue No. 2.*
Burns, M. (2005)	***Education Leadership (Dec 2005 – Jan 2006).***
Colbert, J. (2005)	***Catching Knowledge Wave.***
Kedian, J. (2006)	***Education Today,*** Issue No. 6.
Perkins, D. (Ed.). (1995)	***Software Goes To School.***
Peters, R. (1965)	***Ethics and Education.***
Salmon, G. (Ed.). (2000)	***E Moderating : The Key to Teaching & Learning On Line.***
Sturgess, A. (2004)	***Future Thinking.***

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