

FOCUS

To improve my understanding of how schools can best implement a 'future oriented' curriculum that prepares our students to participate and contribute to society in their future lives.

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

"The only thing that is constant is change" - Heraclitus.

As an educator I have been grateful for the wealth of good quality educational research that we have available in this country. Of particular note are the Best Evidence Synthesis (BES) publications. These have proved invaluable when developing initiatives and programmes at Taupo-nui-a-Tia College and when looking into my leadership practice.

However, I have not found any publications on Future Oriented Curriculum (also referred to as 21st Century Curriculum or Future Focused Curriculum) that were able or indeed willing to present a definitive model that can be readily adopted or implemented schoolwide. The simple reason for this is that there is no 'one way' of developing a future focused curriculum and currently there are only a handful of Secondary Schools in New Zealand 'disrupting' traditional practice and adopting a future focused approach for their learners. What is available is a growing body of knowledge, theories and practices dating back to the end of the last Century that has developed in response to the increasing rate of change in society, change that calls into question the purpose of secondary schools and the capabilities or skills needed by our young people.

Students in our schools today face a future that will involve an ever changing job market and an exponential growth in computing power and knowledge. They will also be faced with complex problems that are interrelated and multifaceted spanning social, economic, political environmental, legal and moral domains. This typifies the challenge for educators in providing an environment for our students that best equips them for the future as global citizens that are able to think critically, be creative and collaborate and communicate with others.

Schools will continually have to learn, unlearn and relearn as they progress through this Century and adopt a completely different view of the use of knowledge and the competencies required for the future. What is abundantly clear is that we can no longer continue to make what we have been doing better!

Bolstad, (2012) paper identifies two challenges for 21st Century learning. The first is to critically reflect on *"fundamental ideas that underpin current practice, and how well these ideas fit with today's learning needs"* (as cited in Leadbitter, 2011, p.6) The second challenge is to engage the school community, teachers, learners, families and the community to *"educational approaches and systems to match new understandings of what kinds of learning are needed to succeed and flourish in the 21st Century world"* (p.78).

From a leadership perspective these are big challenges in terms of changing current practices. Graham Young's paper (2013) provocatively questions whether the shifts needed occur through continuous improvement "or when there is much talk of paradigm shifts, does it require a revolution?" He argues people only change in response to a very clear need and this usually involves distress, dissonance and tension or a more positive motive such as an intense desire. He states that "the satiated and comfortable are less likely to make a behavioural change". Herein lies the challenge. Any real change will only occur if it is occurring in the classroom. Teachers, particularly from the baby boomer generation, have had years developing their beliefs and assumptions on what works in the classroom. To question these teachers' beliefs and behaviours around pedagogy is difficult for them and some take it as a personal affront to their ability. Coupled with this is the fact that the community perceives Taupo-nui-a-Tia College as doing very well in providing an education they are familiar with and understand. To disrupt what they know and effect change that models 21st Century Learning runs the risk of being asked "if it isn't broken, why fix it?" These challenges highlight the need to include all sectors of the school community in any changes to the curriculum and to clearly focus on the 'why' in effecting change before working on the 'how'.

'The future is unknowable, but not unimaginable'

- Ludwig Lachman.

METHODOLOGY

The methodology that I have employed for this report is based on the "six emerging principles for a future oriented education system" These principles were developed from a research project by Rachel Bolstad from the New Zealand Centre for Education Research commissioned by the Ministry of Education.

Bolstad (2011-2012) states in her paper –

"Our goal was to synthesise ideas from the 21st Century learning literature with current knowledge about practice issues and future possibilities for innovation in New Zealand education in order to distil a set of themes or principles which a wide audience of educational stakeholders might be able to engage with". (p.77)

I have used these six principles to scaffold my findings from my sabbatical. My sabbatical consisted of visits to schools in New Zealand and abroad, attending two conferences and visits to some modern work environments. It also involved researching literature that focused on future oriented curriculum.

SIX EMERGING PRINCIPLES FOR A FUTURE ORIENTED EDUCATION SYSTEM

1. Personalising Learning

Personalised learning was a common theme in the schools I visited. The concept of a teacher getting to "know their learner" was best illustrated at my visit to the MET School in Providence, Rhode Island. Every student was assigned a "learning advisor" who got to know their learners well during their time at this school. This included their prior knowledge, ethnicity, their interests and hobbies and career aspirations. Personalised learning programmes or project based programmes were developed for every student in the college based on these interests, with the students' parents playing an important role in this process. The goal setting or learning plans were particularly powerful as the learning advisor would meet with individual students at the start of each week and set goals for that week that were checked at the end of the week. As well as setting short term and long term learning goals every student had an internship that provided them with the opportunity to pursue their interests in the workforce. Students' options were many and varied ranging from working in an animal shelter to fashion photography. I was fortunate to have visited this school when students were being assessed on their internship. Every student had to give a presentation to their peers, learning advisor, Principal and parents based on a range of key competencies. After their presentation people in the room had the opportunity to ask questions and critique the presenter. They also played a role in determining whether their class mate was ready to graduate from that year level or needed further development.

In order for the MET School to effectively personalise the learning throughout their institution classes were kept to a maximum of fifteen students. When I asked Principal Arthur Baraf if the State granted his school additional funding to allow these classes to be so small he said that they received the same funding as every other school in Rhode Island. He said that the way the MET schools paid for small class was to cut back on their infrastructure. The school had no deputy Principals, guidance counsellors or librarians as these roles were filled by the learning advisors. When I asked the Principal what evidence he had to show that the approach they take worked, he said that a University in the state had been doing a longitudinal study on MET school graduate. They had tracked their students' progress for about 12 years – not just their grades and graduation rates but their level of success in terms of their persistence in college, civic involvement, career progress and happiness. At the Met school 98% apply and are accepted to college and 75% of them are the first in their families to continue their education beyond high school. When I asked him what were the challenges of leading a school like the MET school he openly admitted that the 'one kid at a time' approach while being rewarding was incredibly demanding (bearing in mind it was the last day of term!)

Giving students the opportunity to experience authentic real-world learning contexts based around their interests and aptitudes was obviously a very powerful motivator for the students I talked to at the MET school. Many said they were disengaged from education at their previous schools but loved the opportunity to learn about things they were interested in. This aligns with the book *Drive* by Daniel Pink (2009) who points out that the most important predictors of high quality work are **autonomy, mastery, and purpose**. At the MET school students played a big role in determining their areas of interest and with the support of a significant adult in their life (learning advisor) were given the opportunity to succeed. Possibly the most important of the three key predictors of high quality work especially in an educational setting would be 'purpose'. Pink's research showed that when individuals (in this case students) believe the work they are doing has purpose they are motivated to do extra work – not for higher grades or extrinsic rewards but for the intrinsic reward. If New Zealand educators want their students to be life-long learners applying autonomy, mastery and purpose into the daily school work would instil a very powerful learning culture. I would contend that these predictors in most cases are far removed from our current system.

David Hood (2015) when looking at the design and operation of the current learning processes in schools talks of the lack of connectivity. By this he refers to the ability to make connections across disciplines that would enable students to see how things 'fit' and have a greater understanding of the relevance of what they are doing. Hood laments the fact that despite there is being a lot of research on how to improve learning it is ignored. Hood refers to what he calls the 'paradigm of one' in secondary school "one teacher, teaching one subject to one class of one age one curriculum at one pace, in one classroom for one hour" (p.13). This is often regardless of mastery and quite possibly with no choice in the subject matter and little understanding of why they are covering said topic.

Hobsonville Point School has a similar ethos to the MET school. Students are given the opportunity to choose areas of interest to them in 'SPIN' (Special Interest) modules along with a range of crosscurricular modules that cover a key concept for a semester. The modules on offer are designed to cover all curriculum areas, encourage critical thinking and creativity and are framed by inquiry and involve independent and cooperative learning activities (see example below). As with the MET school Hobsonville Point has a learning advisor working with each student. Their role is to build a programme around the needs of the learner and give them ongoing support. My visit to this school coincided with the students working with their learning advisors in planning their next block of work. What was noticeable was the level of engagement of the students – despite the fact that it was near the end of the school day on a Friday afternoon. Some were working independently while others were working with their advisor. What was apparent from talking to the students was that they all had a good understanding of 'where they were at' with their learning. Below are some examples of the modules offered:

Title	Description	Learning Objectives	Learning Area	Teachers
The Great Outdoors	Explore the thrills and spills of New Zealand's tourism industry while considering social and environmental risks. This will be a theory-based module which will explore and develop activities that involve outdoor risks. Students will learn how these have become an important economic industry in NZ. As part of this module we will be going on a trip. This will require students to make a financial commitment.	To make sense of resource use by understanding adventure tourism as an economic activity and analysing the social and environmental impacts of this activity. To generate by designing risk analysis forms (RAMS) and creating adventure opportunities for their peers.	Social Sciences and Physical Education/Health.	

Title	mall Module runs in blocks 2 and 3 on We Description	Learning Objectives	Learning Area	Teachers
Bombs Away	In this module you will build a medieval catapult called a trebuchet, and learn about the mathematical concepts that make it work.	To generate by following processes to construct a trebuchet catapult. To generate by constructing rules around the properties of equations in the forces used in trebuchet.	Mathematics and Technology.	
Power and Manipulation	How manipulated are you by the language you are presented with every day? How are you targeted by big businesses? In adverts, in promoted videos, on billboards and even in these module booklets? Learn about the economic world, the power of language and the language of power.	To make sense by analysing language features and structure through the close reading of advertising. To critically reflect on the power of language in the economic world and the influence of language in our daily lives.	English and Social Science.	

Mercury Bay Area School has been focusing on its students moving from the transmissional learning style involving basic knowledge recall, basic skills development and low-stakes thinking skills toward transactional learning involving higher levels of interconnectedness of learning and thinking disciplines (e.g. Blooms, SOLO etc.) through to transformative learning that involves the rethinking and questioning of 'content' that can lead to the creation of new knowledge or lines of inquiry. Principal John Wright notes that "The "hook "to this progressive development of learning is through the discovery and development of learners' "passions" and their engagement in pursuing their and others passions through the process of authentic personalised inquiry" (p.5).

2. Equity, Diversity and Inclusivity

Future education theorists argue that there needs to be new ways of thinking about equity, inclusivity and diversity. Currently in New Zealand 'equity' is viewed in terms of addressing the needs of learners that the statistics would suggest are on the fringe of our education system and whose needs have not been well met. In particular there has been a nationwide focus on Maori, Pasifika learners and those with special needs. While the goal of decreasing disparity and raising overall achievement are worthy the theorists would argue achieving equity is not just about addressing underachievement or disengagement of particular groupings of students and communities. They question if indeed getting everyone closer to a normative standard actually reflects success – especially in terms of 21st Century learners that should be able to communicate, think critically and creatively and work with diverse others. Bolstad (2012) emphasises the need to embrace "diversity" to support 21st Century learning –

"Diversity' needs to be recognised as a strength for a future-oriented learning system, something to be actively fostered" (p.85). The author says there is a need for greater engagement from the community in shaping the needs, strengths and interests of the learner. She adds a proviso that schools need to have a good understanding of the values and assumptions that exist in the various sectors in their community and vice versa in order to form genuine partnerships that will support learner's success. This is a key focus at the MET school in Providence and brings to mind the African proverb "It takes a village to raise a child". The school is in a lower socio-economic part of the city and Principal Arthur Baraf said it is the most ethnically diverse school in the state. The school recognises how important the family is to the educational process. Parents are members of the learning plan team (along with students and the advisor) and help design their child's curriculum. As panellists at a student quarterly exhibition, parents are also involved in assessing their child's work. They are also invited to consider running a 'Pick Me Up' (a whole school morning meeting) or running a workshop related to their career field or interests. The MET school also forges strong links with the wide cross section of business sector in Providence through their intern programme. One of the assessment presentations I attended with the Principal at the end of a student's internship was on site at an elderly citizens' home. Present were the learning advisor, members of the student's family, the supervising nurses at the home and a number of residents. After the presentation every member of the audience had the opportunity to give her feedback through a different lens. The student concerned had come from a very troubled and abusive background and it was a moving experience seeing her talk to an adult audience and then receive feedback and support from this community.

The other aspect of the MET School's engagement with the community was the notion that schools should not only be an integral part of the community but they should also play a role in making their community a better place. As part of their programme each student in the school had to undertake a 'community selfless act'. Examples given by students I talked to included cleaning up a cemetery, organising a bike festival and a breast cancer fun run.

Hauraki Plains College has made a conscious effort of engaging with their community to make rich learning connections. One example was a group of senior science students working with local iwi. Their challenge was to explore ways of making land useable that had been peat mined. Mercury Bay Area School also looked at ways of engaging with their community and one of the projects was to have a group of students build a kit set plan alongside members of the local aero club.

Hipkins, Bolstad, Boyd and McDowall (2014) identifies diversity as an important component in solving what the literature on 21st Century education refer to as 'wicked problems'. These are problems todays learners will face in the future that will not be able to be solved in straight forward, problem solving methods from only one domain or perspective. Global warming is an example of a wicked problem and is a problem that is multifaceted, spanning multiple domains including social, economic, political, environmental, legal and moral. Hipkins et al (2014) contend that these problems can be addressed by bringing together disparate perspectives. Different people see different perspectives and these viewpoints can all be put forward.

I would contend that all schools have wicked problems on their back doorstep and I would also contend that schools need to develop students' capacity to draw on the diverse range of views and beliefs their students have if and when they focus on these problems. In Taupo-nui-a-Tia College's case the gradual pollution of Lake Taupo is a good example. A student coming from a farm around the lake I suspect would have very different views from Maori students or students that have parents that work for the Department of Conservation. Having students understand other people's viewpoints can be difficult and could require a repositioning of their own thinking. The ability to put yourself in 'other people's shoes' and being able to 'talk each other's talk' relates directly to the key competencies of 'using languages, symbols and texts' (making meaning of different discourses), 'thinking' (thinking critically about different perspectives and making new knowledge), relating to others (sharing ideas and listening) and 'managing self' (knowing who they are and where they fit in).

3. A Curriculum That Uses Knowledge to Develop Learning Capacity

Key note speaker Alan November at the Building Learning Communities conference in Boston talked about the need to move away from the industrialised classroom model, where the "curriculum is covered" regardless of mastery. Where the teacher owns and manages the learning. In reference to the traditional school model he mentioned a very cynical 16 year old girl he came across in a school when he was doing advisory work. She said –

"The most important skill to have to succeed in this school is a willingness to learn how to be taught." This is opposed to teaching students how to learn.

Hipkins et al (2014) contend that we place limitations on students learning based in part on assumptions about the mind, knowledge and learning namely:

- Knowledge is true, stable and discipline specific that is developed slowly by experts and the is located and can be passed between the minds of individuals.
- Minds are like containers which store and process knowledge.
- Learning (process of storing knowledge in individual minds) occurs at the same rate for students the same age (p.37).

Viewing knowledge as content, concepts and skills that form discrete subjects has been part of schools curriculum throughout the 20th Century. Teachers transmitting knowledge to students, usually with assessment deadlines is very much ingrained in our system.

The future focused literature views knowledge in a completely different way. Bolstad (2011, 2012) states that –

"...knowledge is seen as something that does things, as being more energy-like than matter like, more verb than a noun. Knowledge in the Knowledge Age, involves creating and using new knowledge to solve problems and find solutions to challenges as they arise" (p.87).

Jennifer Palmer, a year 12 student from Orewa College defines this 21st Century view of knowledge well when talking to Kim Hill on National Radio. She was being interviewed after winning the premier award in the Sir Paul Callaghan 'Eureka' Science competition. Kim Hill noted that in an age where it is easy to access information and to 'cut and paste' information to become an instant expert the significant thing about Jennifer's presentation was the amount of original thought that went into it. Hill, who was one of the judges of this competition noted that she hadn't just taken a fact – she had gone further and found out "why?" and "what if? "and why then? When asked if she has always been that way Jennifer replied –

"I've always been that annoying kid that asks why? Why do we do this, why not that?, how can we do this better? I like knowing a fact but it is not the fact that is the most interesting to me it is the way we have used it or the reason it is. I was always the kid going why is it raining? Okay so I get the water cycle explanation – does that then mean when we do 'this does that have an impact?, or what happens to the river if there is no rainfall there? It is always about finding the question 'why' because the deeper we delve the more we are learning and the more problems we can fix."

Changing how knowledge and learning are viewed in schools and in turn a curriculum to support this view presents some big challenges. Firstly the transfer of knowledge is how teachers were taught and it is all they have ever known. The majority of teachers in New Zealand secondary schools are 'baby-boomers' who have been 'plying their trade' for many years and are familiar and in most cases competent using the 'traditional' model. Secondly schools are under pressure to achieve the government mandated 85% pass rate for NCEA Level 2. Assessment tends to drive curriculum in many New Zealand Schools and Haque (2014) alludes to this in his book 'Changing our Secondary Schools' He argues that the 'front end' of the New Zealand curriculum (competencies, values and principles are

little more than cosmetic in most secondary schools and states –

"For the back end of the curriculum (the achievement objectives), the requirements of NCEA have probably outweighed the requirements of the curriculum, particularly in the senior school".

Haque emphasises this point by saying that evidence of this can be seen in course outlines published in just about any secondary school in the country. He states that –

"Almost without exception the courses comprise a simple listing of the standards to be offered, with their title and NZQA code number, under the heading of a traditional subject such as economics or English or mathematics. NZC is hardly mentioned."

Alan November in his Master Class at the Building Learning Communities Conference talked of teachers who are changing their approach to the first five days of school for their students. With the 'first five days' approach the emphasis shifts away from outlining course schedules and assessment tasks to teaching students how to ask questions. During the first three days students are given a provocative topic and are required to learn how to ask rich questions around that topic. They are required to think critically and explore a diverse range of views on the topic and they are also taught how to use the net effectively to access knowledge. November contends that this is a vital skill that is often overlooked, with teachers making the assumption that the 'digital natives' in their class have this skill. Students are taught to source, synthesise, validate and cross reference information. Days four and five of involves preparing for and then going online to experts from around the world.

November used an example from his senior history class. He showed the students a letter from former baseball professional and civil rights campaigner Jackie Robertson written to President Kennedy expressing his concerns in no uncertain terms about the lack of progress regarding civil rights for black people in the USA. After thorough preparation his class were given the opportunity to talk to a history professor and world expert from Harvard University on the topic in question.

4. "Changing the Script": Rethinking Learners' and Teachers' Roles

If we teach today as we taught yesterday, we rob our children of tomorrow - John Dewey.

With the shift in thinking about knowledge and learning with a future-oriented curriculum comes a redefining the role of the teachers and the learners. Alan November (2012) in his book "Who Owns the Learning" asks the questions, who owns the learning and who works harder in the classroom, the teacher or the student?

November advocates for a change in pedagogy that gives students more autonomy and redefines the role of the learner to one of a contributor, collaborator and leader in the learning culture. He acknowledges that adjusting from the traditional teacher directed model of instruction and giving up 'some of the power' is difficult and the transition involves changing our understanding of student motivation and our expectations for student contribution and collaboration. November's has a model called the 'digital learning farm' that involves giving students more responsibility and leverages educators ability to tap into would he states is the underestimated value of student contribution. November says the transition involves changing our understanding of student motivation and our expectations for student contribution and collaboration. In a digital farm classroom students are given opportunities to design tutorials for the rest of the class with the view that students often learn better from other learners. They are also given the opportunity to be the class scribe using a range of online collaboration tools ensuring the class can critique these notes. This effectively means the class is writing their own textbook as the year progresses. Other areas of responsibility in the digital farm model are to appoint student researchers to access knowledge on topics the class are looking and global communicators and collaborators where students link with classrooms and topic experts from around the world.

Bolstad (2011-2012) concurs with this views and says that it is not a dichotomy in terms of the learning being 'teacher driven' or 'student centred' but has the view that learners and teachers need to think about how to work together in a knowledge-building learning environment.

The MET School's learning advisors have a very different role from the 'traditional' teacher's role. Because every students programme is individualised they often don't have the specialist subject knowledge to share with their student. This means they are often working alongside their student learning new material. This might mean setting up a science experiment to test a hypothesis or working together to source expert advice in the community.

Mercury Bay Area School have looked at "changing the script" over the last three years and identified what their learning organisation needs to deliver:

- Differentiating the learning and working with groups of students in a diverse way.
- Providing opportunities for increased dependence of learners and for learning.
- Increasing the opportunity for learners to determine their learning needs, areas of interest and difficulty, and pursue their passions.
- Releasing historical teacher-led (and dominated pedagogies).
- Providing significant flexibility for educators to craft, coach and deliver the learning support, encouragement and inspiration for each of their students.

5. A culture of continuous learning for teachers and educational leaders

The move away from the current approaches towards a future-oriented learning system will require a change in discourse for many school leaders and teachers. Many of the future-oriented principles identified are far removed from what the educators expected to lead and implement have known. Bolstad (2011-2012) states that this means there is a need for well-designed professional learning programmes for school leaders and teachers based on what is known about adult learning. She also identifies the need for networks and relationships established for schools that are trialling new approaches to curriculum delivery. Currently there are only a handful of schools trialling a future-oriented approach and regular contact and collaboration has been identified as a need by these schools.

6. New kinds of partnerships and relationships: Schools no longer siloed from the community

If schools are to have authentic, contextualised learning experiences in their curriculum it is important they have the support of their community. Solid partnerships formed with different sectors in the community enables a school to tap into a range of learning experiences and expertise beyond those that a school can provide. Examples of this include:

- Taupo-nui-a-Tia College working with Tuaropaki Trust to develop a computer application that would assist their diary operation.
- Taupo-nui-a-Tia College Kapa Haka group working with a tourist company to offer a cultural experience, including performing arts and a meal for visiting tourists.
- Taupo-nui-a-Tia College having 'ownership' of a geothermal site and monitoring it for GNS Science.

The Taupo community has a wealth of expertise in the community including scientists, geologists, volcanologists, engineers, Maori carvers, fishing guides and conservators but to name a few. From my experience all of these people are more than willing to support our young people. The key for schools is build those relationships and ensure everyone concerned has a clear understanding of expected outcomes from the partnership.

Not only should schools be looking to reach out to their wider communities to support the learning activities of their students they should also be exploring ways that the school can make their community a better place. Hobsonville Point School is located in a newly developed suburb in Auckland and they have been doing conservation in the nearby estuary.

CONCLUSION

Having had the opportunity to read a range of books and papers on a future oriented education system coupled with school visits and conversations with educators in New Zealand there are a number of key themes that have emerged. The first theme is that our current system is no longer fit for purpose for a complex and changing world. If schools are looking at transforming their curriculum to be future-oriented they need to put this idea to the test and examine what they think the purpose of schools is in the 21st Century. The second theme is that any change or transformation will require 'big picture' thinking and considerable 'unbundling' of many of the structures and systems we have taken for granted for many years including discrete subject areas, streaming and one hour periods. The literature suggests that small steps can be taken in terms of managing change provided they are part of a bigger picture based on a coherent set of shared values about the future of schooling. What is made very clear is that continuing to tinker with the status quo is not enough. The last point made is that a future oriented learning system has a positive impact on all learners in a school community but the change process does take boldness and courage.

RECOMMENDATIONS FOR TAUPO-NUI-A-TIA COLLEGE

- 1. Revisit the schools vision "All learners empowered to participate in our community local, national and global". We need to question whether our learners are 'empowered' and whether a graduate profile of someone leaving this school would be a young person with a passion for learning and the understandings, skills, attributes and values, or dispositions, that will enable them to meet the challenges of their future.
- 2. Provide professional learning opportunities based on a future-oriented curriculum for staff. This can include visiting guest speakers, visits to other schools, attendance at conferences and discussion forums in the professional learning groups operating in the college. There are already some rich discussions occurring in the staffroom and the momentum needs to be maintained. These same learning opportunities should also be provided for members of the board and wider school community including parents and the business sector when and where appropriate.
- 3. Implement recommendations made for the learning advisors programme established in 2015. This includes developing the themes, programmes and skills identified as being relevant to the different year levels.
- 4. Build on the partnerships that we have begun to establish in the community and utilise the expertise and skill base not found in the college. Ensure both parties have a clear understanding of the aims and objectives of the relationship and that our students are engaged in authentic educational activities.
- 5. Use the Taupo Community of Schools network to look at what is happening in primary schools in terms of future oriented curriculum development and how it could link to secondary schools in the group.
- 6. Encourage cross curricular interaction to break down the faculty and subject area silos. This has started to occur already but we need to share more examples of successful 'cross fertilization'. Coupled with this is the need to support and resource 'risk takers. By this I mean those staff that are willing to step outside of their comfort zone to trial new approaches to the learning taking place in their classrooms.

My sabbatical studies comprised of the following:

- 1. Researching publications focused on future oriented curriculum, digital learning and motivation. Key Sources include:
 - a. Bolstad, Rachel (2012). *Principles for a future-oriented education system.* New Zealand Annual Review of Education
 - b. Gilbert, Jane (2005). Catching the knowledge wave: the Knowledge
 - c. Hipkins Rosemary, Boyd Sally, McDowell Sue, Bolstad, Rachel (2014). Key Competencies for the Future. NZCER Press: Wellington
 - *d.* Hood, David (2015). *The Rhetoric and The Reality, New Zealand schools and schooling in the 21st Century.* Fraser Books: Masterton, New Zealand
 - e. Haque, Bali (2014). Changing our Secondary Schools. NZCER Press: Wellington
 - f. November, Alan (2012). Who Owns The Learning? Solution Tree Press: Bloomington, Indiana
 - g. Pink, Daniel (2009). Drive. Riverhead books, New York, USA
- 2. School visits:
 - i) Hauraki Plains College
 - ii) Mercury Bay Area School
 - iii) Hobsonville Point Secondary School
 - iv) MET School, Providence, Rhode Island.
- 3. Conferences
 - I) Canada International Conference on Education, Toronto, Canada
 - II) Building Learning Communities, Boston, USA.
- 4. Workplace visit
 - i) Autodesk, Pier 9, San Francisco, USA
 - ii) Kiwi Launching Pad.