



Modern Learning Environments, 21st Century Learning & Curriculum and Future Focused Learning

Sabbatical Report

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During my sabbatical I looked at research into Modern Learning Environments and how we could include MLE's at Onslow College. I also undertook a study of recent developments in 21st Century Learning and Future Focussed Learning including the changing Digital Landscape for schools. The following report is a collection of my thoughts combined with various research I read and considered in my time out of school.

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I would like to acknowledge the work of Ian Jukes and Nicky Mohan from InfoSavy21 that has been the basis of much of the following report. I spent a very challenging and rewarding day working with Ian and Nicky in a master class in Australia. Following that I have continued to engage with them through their writings, twitter and blogs. They have had a significant influence on my re-thinking of my role as an educational leader. I have taken the findings of their research and applied them to the Onslow College situation in commentary in this report.

MODERN LEARNING ENVIRONMENTS: (MLE)

There has been a Ministry led focus on all property development in New Zealand schools having to meet prescribed MLE requirements. This has created some difficulty for many schools that's aging property infrastructure make such an ambition difficult to achieve.

Modern Learning Environments / Innovative Learning Environments

In the past the term Modern Learning Environments (MLE) has been used. Innovative Learning Environments (ILE) has greater international recognition and the Ministry of Education is migrating to this term consistent with both international usage and growing discomfort in New Zealand with the term MLE.

Most of New Zealand's school buildings were built in a time when direct teacher led instruction was considered the only pedagogy that resulted in effective learning. This led to what is now described as "Factory-style" learning (where all students learn the same things, at the same time) that has hopefully largely disappeared from our classes. However the actual classrooms largely remain as they were originally designed, and still retain the suggestion of this factory-style learning. Many schools such as Onslow College have little ability both physically and financially, to change their traditional teaching spaces into what the Ministry define as a MLE. In line with recent international trends and from the international research, I believe we should focus on creating ILEs in our teaching and learning spaces as this is pedagogical change and not a physical one and something we can achieve.

Regardless of the actual name of the learning space, we need to first work with staff to reduce the confusion and challenge of the change to an ILE. This could be an issue for many who have taught comfortably in a traditional classroom environment for many years. These staff may not be fully convinced that the change is both necessary and beneficial yet their buy in is crucial if we really are going to meet the learning needs of our students.

When we look at the features of an ILE, I am convinced we can quite easily provide;

- Flexibility – space for group to spread out and learn collaboratively
- Openness – where break out spaces are not possible, merely shift furniture
- Resources – especially technology where students can research independently

This fits in well with what is generally agreed are the challenges our education system faces;

- To equip young people to be problem solvers
- To encourage students to be innovators, designers and creators and not just passive consumers.
- To empower students to use digital technologies for learning across the curriculum.

This relies on teachers being prepared to hand over some of the control for learning to their students and to look at ways how they can provide the questions rather than the answers.

The development of the first MLE at Onslow College was largely imposed by the Ministry directives for use of 5YA funding for property refurbishment. I believe the finished facility is

superb and will create a wonderful learning environment. However with the benefit of hindsight, we should have spent more time on the following reflective questions as while staff were generally happy with the finished product (some were not!) I wonder if we have fully comprehended the changes in pedagogy these new facilities both encourage and rely on. I would encourage any school starting on a refurbishment project to consider the following reflective questions.

- What is our Onslow College vision for teaching and learning? Does everyone share this vision? How do we know? Which aspects of our school culture would we like to improve? And how would we measure the improvement?
- What are the key pedagogies required by our teachers in the 21st century? Are these the ones in use in our school most days? What systems and processes are in place to help teachers reflect on their own practice and learn from each other?
- If we were to build a new learning space that reflected our school's vision and commitment to learning, what would it look like? What would students need to have access to over the course of a day? What activities would they engage in over the course of a day? What technology would be required to support this?
- If curriculum, pedagogy and learning environments are helping to make learning more personalised, what other elements of the schooling ecosystem need to change? Who is a 'teacher' and who is a 'learner'?

Moving forward, any future property development at Onslow College will struggle to create the current Ministry of Education MLE outcomes due to the physical constraints however I am committed to developing ILE spaces and believe we can achieve that objective. This must be accompanied with the change in teaching style to embrace the ILE pedagogy.

In 2015 we have asked all staff to investigate a teacher inquiry around our school wide focus on critical literacy, specifically reading comprehension. I can see how an ILE can support our goal as they naturally encourage and enable sharing of interventions, reflections and peer observations. Collectively they will lead to continuing improvement in pedagogy which is the on-going challenge for any 'traditional school' moving to an ILE environment.

Teaching as inquiry needs to be the centre of teachers' practice, as it is at the heart of the *New Zealand Curriculum*. Inquiry has been promoted as being a vital ingredient of all learning and teaching, meaning teachers are not simply delivering a curriculum but they need to build their professional knowledge by inquiring into their curriculum area and into the art and science of teaching.

While middle leaders have a central role in facilitating inquiry-based teaching throughout a school, I agree that the Executive Group, as senior leaders have to empower middle leaders to do this by investing time, resources and creating opportunities for them to have one-on-one interactions and professional conversations with the teachers they are mentoring. It is pleasing to see this process has started at Onslow College with teachers working their way through a spiral of inquiry based on selected target students. We have also run a series of very successful 'market days' where staff share good practice in the teaching of explicit literacy strategies, with their colleagues.

What needs to change?

If 21st century schooling's main goal is to build students' "learning capacity", to help them develop into life-long, active, independent learners, then teachers need to be "learning coaches"—a role that is very different from that of a traditional teacher. Learning coaches may provide knowledge and develop skills: however, their main role, as more experienced learners, is to provide the kinds of support that will help their students reach their learning goals. Learning coaches, like their students, are also learners. While I do not necessarily like to term learning coach, I will use it until we come up with a more Onslow appropriate descriptor.

In regard to the Onslow College environment, I believe we need to investigate ways of incorporating (prioritising?) time in the weekly timetable for learning conversations where every student has a teacher who takes on the role of being their learning coach. That coach needs to spend time talking with the student about current progress, future planning and what assistance they need to achieve their desired outcomes. It cannot be an ad-hoc arrangement but a formal timetabled activity that every staff member is involved in. We have a lot of achievement data on each student on our SMS however we need to turn that data into information through meaningful learning conversations. The current review of our reporting format should provide a 'live' record of student achievement alongside teacher commentary and this will provide the basis for regular learning conversations.

Staff also need to be engaged in looking for ways to improve their learning capacity. They are experts in their subject area but not necessarily experts in everything their students need to know. However they should become experts in working out, with their students, how to do something, how to find out something or how to use something to do something new. Teachers bring experience of the subject to the lesson and need to constantly review the most appropriate method of engaging students to develop their own understanding using all available resources set up by that teacher.

One key part of the teacher's role is to model the confidence, openness, persistence, commitment and pleasure in the face of uncertainty that students need in order to be good learners.

A second key aspect for 21st century/knowledge age schooling is the new orientation of the teacher's role to support students to actively interact with knowledge and to "do things with it"—to understand, critique, manipulate, create and transform it. Teachers need to scaffold students' intellectual curiosity, their problem-posing and problem-solving ability and their ability to build new knowledge—together with others. Often this is referred to as the 'so what' aspect of learning.

For teachers who have always worked in the 20th century view of schooling, learning and knowledge, this is a new approach which does not build on their experiences. Adopting it requires them to rethink their ideas about what they teach and why, and to rethink how they are as a teacher. It requires them to "re-situate" themselves professionally, not as a 'traditional' teacher, but as a highly-skilled, advanced learner.

This obviously involves something far more than adding new knowledge and/or new technical skills to teachers' existing repertoires; it requires teachers to "shift their paradigm". To break with and replace their past ways of thinking with a totally new understanding of their role and its purpose. This is a major undertaking, and if we are to do this teachers need new kinds of professional learning.

Today's teachers, if they are to meet the needs of 21st century learners, need to continue to develop what they know using the on-line access to information and also develop how they know. We need to break away from what has been commonly called 'the paradigm of one' where you have one teacher in front of one class doing one subject for one hour. The New Zealand Curriculum clearly sets out what leads to quality learning including individuality and personalisation, collaboration over competition, teachers as facilitators and passionate about learning. While we all applaud these values, it is quite obvious that the higher student go in a school, the greater the gap between the NZC values and what actually happens. This was well described by David Hood as the 'Rhetoric and the Reality'. (Hood 2015)

Another question posed by many is if our current curriculum is designed as a filter of students for university? If so, we are missing the mark as only 30% of students nationally end up going to university. There is an interesting international list of very successful people who did not undertake any tertiary study and some who even dropped out of school. Given the changes in our economy, that is certainly not something we would promote too widely though!

The 21st century learning literature focuses on the need to develop students' cognitive, inter and intra-personal capacities. However, a necessary precursor to this is the teacher's capacity for, and awareness of, their own learning needs and how they could be developed. Moreover, as Michael Fullan points out, changing individual teachers will not be enough.

"Change needs to take place across the system, through purposeful interaction between individuals at all levels. Twenty-first century teacher professional development needs to combine and integrate individual and organisational development: it needs to build individual learning, but it also needs to focus on individuals working together—to build their current "community of practice" as teachers, but also to move forward together in "learning communities". Fullan (2005)

Many of our high-achieving students have school smarts and thus can excel at school-related activities - they have developed abilities that allow them to move smoothly through our current assessment driven school system because they have developed the necessary skills to effectively cram for and complete assessments. It is often suggested that our academically successful students do well in large part because they have learned to play the game called school.

If our students are to survive and thrive in the current culture of the 21 century of technology driven automation, abundance and access to the global labour market, independent thinking and creative thinking become essential skills: Jukes & Mohan 2014

I agree that if our students are to be successful in making the transition from the current school environment to the future work environment, our job as educators must be to move from demanding the compliance of our students, to making ourselves progressively redundant. As we do this, we must shift the responsibility of learning from the teacher where it has traditionally been, to the learners where it belongs.

This shift sounds simple, but in fact, it is an incredibly complex task because for it to happen, it requires teachers to move away from a style they learned through and have probably taught under their entire careers. It is also a considerable shift from what parents understand and are comfortable with in education. Students also have most likely become used to a certain methodology even if that is not necessarily what they find best for their learning.

The new and different paradigm of teaching and learning is that of progressive withdrawal. Our responsibility must be to ensure that our students no longer need us by the time they graduate from school. This is actually very difficult for many teachers who have an absolute commitment to their students and whose students have developed a real dependence on that teacher. While certainly not wanting to criticise those teachers, we need to work with them to gradually loosen the strings. There has been interesting debate about the performance of NZ students in the international PISA testing when compared to some of the very successful countries such as Shanghai (not sure why this qualifies as a country). It has been found that students in Shanghai and Singapore are spoon fed preparatory work for those assessments and that this is the main reason they do so well. Rather than using this as any form of excuse for our performances, we should look at what and how we are teaching our students and ensure that is quality 21st century skills for their futures.

The result of our current systems is that too many students are school smart but not necessarily 'street smart' with the necessary high level thinking skills and competencies required for success in their futures.

Research suggests that becoming an independent learner requires the development of two major intelligences; cognitive intelligences and emotional intelligence.

Cognitive intelligences involve the rational higher order thinking skills. These include how to manage, interpret, validate, transform, communicate, and act upon information. These cognitive intelligences include abstract reasoning, problem solving, communications, creativity, innovation, contextualized learning, and technical, information and media literacy skills all used in the context of content areas.

Emotional intelligence competencies include four major skill sets – self-awareness, self-management, social awareness, and relationship management. Today there is much evidence to show that significant leverage can be obtained by promoting learning strategies in the emotional intelligence. Emotional intelligence is particularly important in developing street smarts.

While a change in pedagogy is required to help students develop these intelligences a significant contributor to students becoming more independent is feedback and how

teachers manage that feedback. As described by Hattie *'feedback is among the most powerful influences on achievement'*

What teachers need to be aware of is that some forms of feedback are more powerful than others. However the primary aim of feedback is to close the gap between where students are at and where teachers want them to be. This telling them of how they could improve must be done without any judgement about the student themselves.

As we look at all aspects of our pedagogy here at Onslow College, I believe we need to review what we all understand as feedback and come up with some agreed processes.

The fundamentals of feedback include;

Focussed – helping students achieve a specific goal by identifying that goal and providing prompts of how to get there.
Selective – identifying a few points rather than overall as that could be over-whelming.
Constructive – honest but showing teachers believe the student can improve.
Be discussed – so students understand and accept what teachers have told them.
Timed – so students have time to adjust and refine their efforts. This should be before rather than after assessments.

There are also different types of feedback staff must be comfortable with and able to apply as appropriate.

Basic – right or wrong with the correct answer
Instructional – specific things students need to do in order to get things right.
Coaching – prompts students to think of ways they can improve without being told directly by the teacher.

As with all aspects of teaching and learning, it must be based on a trusting relationship between teacher and student as it is only with this that students are likely to accept feedback as both an honest appraisal of their learning and also how they could improve further. Teachers need to encourage students to not be afraid of making mistakes and that they can actually learn from those mistakes. This can also link feedback to goals.

A challenge for teachers as we look to meet learning needs with our changes in pedagogy is for us to remember that feedback works well both ways and those teachers who encourage feedback from their students are well down the path of creating that trusting and shared learning focussed relationship. Feedback should be a key aspect of any successful appraisal system and we are including it in the new system currently being developed at Onslow College.

The Digital Landscape

A massive challenge facing schools is acknowledging the new digital landscape that allows students access to information and learning experiences outside schools and classrooms. Learners can engage in experiences that have traditionally been the domain of teachers and the adult world. Whenever and wherever they are, students can access information, music

and multi-media, full motion colour images from friends and school mates, as well as people who they might have absolutely nothing to do with normally.

It must be stressed that this is not about schools having high-speed networks or students being able to use laptops or handhelds. Even when hi-tech resources are available, if the resources are only used to reinforce old mind-sets about teaching and learning and how that learning is assessed, little will have changed. **It needs to be repeated that digital learning is not about flashy devices but a strategic mind-set that leverages available resources to improve a school focus on engagement and achievement.**

This is about developing the full spectrum of cognitive and emotional intelligences that are increasingly required in the culture of the 21st century. As such, this is primarily a headware not a hardware issue.

This is compounded by the fact that many adults, decision-makers, and educators are not in synch with the new digital reality of students. We don't have the experience, skills or in some cases even the inclination to help them even if we have the time. Many are almost scared of the prospect of incorporating technology in a class where the students are far more confident using that technology. In many schools it is often the younger staff who are the 'runners' in the use of IT in teaching and learning. It becomes important to any school that they create the environment where these younger 'runners' can lead the development of the new IT pedagogies and that the older staff are prepared to learn from them. This sharing is regarded as one of the most effective form of teacher professional learning.

A default position we must ensure we don't fall into, is schools and teachers persisting in using new technologies to reinforce old mind-sets. These are issues well beyond computers and networks and way beyond traditional testing.

To understand the new digital landscape and to leverage the world our students live in and enjoy, we must be willing to immerse ourselves in that world and embrace the new digital reality. If we can't relate, if we don't get it, we won't be able to make schools relevant to the current and future needs of the digital generation. Teachers could and should make use of the digital expertise of their students and let them lead the learning around technology.

Because of our current situation where we are possibly (definitely!) more focussed on assessment and therefore facing limitations on rich learning time, we are unable to properly guide our students or help them develop the necessary skills that will empower them to effectively use these powerful resources. As a result, it is often the teachers, not the students who define where they go, how they get there, and what they do when they arrive.

We assess students using standardised procedures that primarily measure information recall and low level understanding, and then say here's a complete picture of a student's learning, which is absolutely not the case. It is extremely presumptuous for us to say that one assessment result is a complete indicator of student learning.

Digital Learners we now have in front of us;

Prefer to access information quickly from multiple sources where as many teachers still favour controlled release of information from limited sources.

Prefer multi-tasking with many things on the go at the same time.

Prefer just in time learning

Prefer instant gratification and reward

Prefer to network simultaneously where as teachers want independent work before networked learning.

Prefer work that is relevant, active, instant and fun where as teachers are still tied to a prescribed curriculum and assessment programme.

6 Ways Technology is Changing Education for the Better [Lorna Keane 2014]

Technology is disruptive and challenging to many teachers. Education technology is in a whole new league. Breaking down the traditional barriers of the school system, it has led to revolutionary changes in the education sector. Where once the golden rule of the classroom was “no talking”, we now have teachers encouraging open collaboration. Where once we had students falling behind without being noticed, we now have systems pinpointing a student’s weaknesses and providing instant help. Where once all communication between student and teacher was lost once outside the classroom, we now have social media to connect at all times. It’s simply indisputable that technology is impacting education for the better, and while some remain sceptical, the proof is in the pudding.

1. Making Learning Personal

One of the biggest benefits of education technology is its ability to facilitate one-to-one instruction. Long considered the most effective form of teaching, it has been deemed an impossibility given the ratio of teachers to students in our system. Technology makes it possible to reach every single student on a personal level, delivering personalised resources and a personalised learning experience to every single student. At Onslow College we have been using Moodle as our LMS but are also moving to Microsoft 365 given that students can now access that free on up to 5 devices.

2. Making Learning Adaptive

In much the same way as personalisation, adaptive learning keeps the focus on the students. Technology has allowed us to keep students learning at their own pace, in their own way, tailoring the learning experience as it continues. This works for all students and we have made significant progress in the use of IT in our Learning Support Department.

3. Making Learning Mobile

Technology has finally given learning the legs it needed to ensure the process never comes to a halt. Through the use of technology teachers can keep students learning long after leaving the school gates. Through the use of personalised resources and lessons, students are encouraged with independent learning and self-assessment, fostering their creativity and critical thinking skills.

4. Making Learning Social

In a world increasingly dominated by social media, integrating social networking in education and encouraging positive collaboration is more important than ever. Technology has given us the key to bringing the social aspect into learning, along with the added bonus of keeping educators, students, and peers connected

5. Making Learning Transparent

While technology certainly makes it easier to facilitate better learning, it goes a step further, giving educators complete transparency into the learning process. With the help of technology, we can now see exactly how each student is learning, using what resources, and at what pace. Teachers need to monitor that the IT is being used to support the learning and the work of the teacher, not replace them.

6. Making Teaching Easier

The administrative duties of teachers have increased significantly in recent years in response to national demands. Technology can take the pressure off by tracking student progress and performance for you, building an organized system of student portfolios. While we can never replace the teacher as key instructor in the classroom, technology really does make the process a whole lot easier.

A somewhat cynical but probably accurate description is that school classrooms operate as analog systems while the modern student operates digitally. It is a commonly held belief that our schools are not broken but that they are possibly obsolete. This highlights that there is a lot of concern about our current schooling systems and its ability to meet our learner's needs.

What we do have to accept is that;

Connectivity is transforming knowledge and while that knowledge is always important, it is easily accessible via what is delightfully called our 'side brain' i.e. our smartphone or tablet.

Students are increasingly our customers rather than our 'targets'. There is a gradual separation of teaching and learning from the buildings we call schools. This is not to say schools do not play an important part in our young people's lives though. A common statement I make to staff is that we want our students to be part of the learning and not just the target of the learning.

Apps may well replace traditional teaching but not good teachers. They will free up teachers to spend more time helping students develop more complex skills.

Our students learn differently than we do and to them the world is literally one large social network and their access to knowledge is only limited by their curiosity and ambition. Their mobile devices allow them any time access.

We need to make allowances for the different ways our students think, relate and communicate compared to how we did those tasks. We can't expect students to comply with our traditional ways but shift to meet their needs and the new digital landscape.

Schools connecting with the outside world

Another significant challenge schools are facing is how we must increase the connection between instruction in schools and the world outside. If we hope to increase the relevancy of the learning that takes place we must link it to what is both happening in the outside world and also what is increasingly required for students to succeed in that world. The key point here is that the students must perceive the relevancy of what they're learning. They need to understand not just the content, but also the context of that content as it is applied to the world outside of schools.

For this to happen, schools need to become far less insular. Schools are often referred to as 'ivory towers' and in many cases, this is an accurate description especially as we get overwhelmed by curriculum and assessment demands. Despite NCEA being in place for a decade, many parents still do not understand the system as it is vastly different from what they experienced. We need to systematically work to bring the outside world into our schools while at the same time sending our schools out into the community. New technologies and an understanding of the new digital landscape can help us do both. The online world creates virtual highway and virtual hallways to both our local and global communities.

For this to happen there needs to be fundamental shift in how teaching and learning takes place in schools. We must look for alternatives to the traditional organisation of schools. We need to uncover our longstanding and unexamined assumptions about teaching and learning, about what a classroom looks, where learning takes place and the resources that are needed to support it.

This relates directly with the changing digital landscape that I have already discussed.

FUTURE FOCUSED LEARNING - What is future focussed learning and what does it mean?

As we look to answer those pivotal questions, we need to consider the following sub-questions to help us arrive at a common understanding.

- *How can education prepare students for living in the 21st century?*
- *How can schooling change to meet the opportunities and challenges of the 21st century?*
- *How can we prepare students to address "future-focused" issues such as sustainability, globalisation, citizenship, and enterprise? Bolstad, R. (2011)*

Literature suggests we need to be future-oriented and adaptable, adopting a more complex view of knowledge that incorporates knowing, doing, and being. Alongside this we need to rethink our ideas about how our learning systems are organised, resourced, and supported. Educators need to consider:

- Personalising learning – how can you use technologies to build the school curriculum around the learner and more flexibly to meet learners' needs?
- Building an inclusive learning environment - how you use technologies to:

- engage learners, family/whānau, and communities in co-shaping education to address students' needs, strengths, interests and aspirations?
- provide access to anywhere, anytime learning?
- support assessment and evaluation processes so that these are dynamic and responsive to information about students?
- Developing a school curriculum that uses knowledge to develop learning capacity – how can you use technologies to enable students to create and use new knowledge to solve problems and find solutions to challenges as they arise on a “just-in-time” basis?
- Rethinking learners' and teachers' roles – how can you use technologies to create a “knowledge-building” learning environment where learners and teachers work together?
- Building a culture of continuous learning for teachers and school leaders – what opportunities to participate in and build professional learning are afforded by technologies?
- New kinds of partnerships and relationships - how can technologies be used to facilitate this?

There has been much written about the skills students need in order to prepare them for a successful if unknown future but I like the following list prepared by *Ted McKain 2014*

1. Intra-personal Skills

Intra-personal skills are internal skills and attitudes that occur within each student including self-confidence, patience skills, and being able to manage your emotions. Intra-personal skills also include the skills needed to be a productive person like how to learn, how to take initiative, how to overcome boredom and self-motivate, how to manage your time, how to evaluate your own work, and how to set long term goals.

2. Interpersonal Skills

Interpersonal skills are the skills we use every day to communicate and interact with other people, both individually and in groups. Interpersonal skills include such things as being able to conduct a conversation, the ability to listen, understanding non-verbal communication, being able to persuade, debate, convince, sell, or defend a position, the ability to ask questions, being able to communicate respectfully, being able to accept criticism, being able to give criticism constructively, and being able to assert yourself.

3. Independent Problem-solving Skills

Learning effective thinking strategies for solving problems will equip students with powerful tools for the modern world. People with these skills will be sought after because there is such a need for problem solvers in the world today.

They are summed up as: Define, Design, Do, and Debrief.

4. Interdependent Collaboration Skills

Being able to work with colleagues on a project has always been an important skill because by working together, a group can be more productive than an individual. Interdependent collaboration skills include such things as being able to organise functional teams with members who complement one another, being able to criticise ideas without criticising

individuals, negotiating within a team, group brainstorming, group problem solving, eliciting and listening to feedback, and taking responsibility for designated tasks. With global online communication and shared productivity tools collaborating with people on projects using tools like Skype and Google Docs are adding a new dimension to modern collaboration.

5. Information Investigation Skills

Today we are drowning in data, but starved for knowledge. What the world needs is people who can investigate a specific topic, find what the data that is pertinent to their investigation, and then determine the meaning of all the data they have retrieved. In order to determine meaning, data must be processed by higher-level thought. We want students to comprehend what they find, not just regurgitate it. We want students to demonstrate understanding, not just robotically echo formula learning. We want them to apply what they have learned, not just acquire theoretical knowledge. Just like writing or problem-solving, students must learn a structured mental process to follow when doing information investigation. They are summed up as: Ask, Access & Acquire, Analyse, Apply, and Assess.

6. Information Communication Skills

Most of us grew up communicating by reading and writing text. Even today schools focus primarily on learning how to communicate with written script. However, in the world outside school communicating solely using script has been superseded by communication that encompasses communicating with text plus graphic design using both still and moving images. And for kids today who are growing up in the YouTube era, communication has moved even further to a new video standard. All of this has changed the skills people need to be effective consumers and producers of communication in the world today.

7. Imagination Creativity

There are two aspects to Imagination creativity. The first is how you can use design to convey meaning and add value to something beyond its function. The other aspect of imagination creativity goes beyond adding value through the design of functional products. These skills can be taught just like any other skill. However, teaching students these skills is not a major focus in the current school system. This must change if we hope to prepare our students for the world of the future.

8. Innovation Creativity

While imagination creativity deals with the form of something, innovation creativity deals with its function. The whole idea of innovation is to make things better. However, there is a major misconception that the ability to innovate is genetic – that some people have it, and some don't. This is patently untrue. The critical skill for innovation is being able to generate ideas. In order to do this people must be able to think freely without the fear of failure. These skills can be developed if we make them a priority.

9. Internet Citizenship Skills

Without adequate instruction on the potential problems associated with using online tools, some young people inevitably do stupid or dangerous things. So it is important that we teach young people how to use these tools safely. There are three guiding principles that young people must be taught. They are: how to protect yourself in the online world, how to respect others in the online world, and how to respect the online work of others.

So what is Quality Learning?

Quality learning is a combination of the following elements:

- Personalised learning: no two individuals learn in the same way, nor do they bring the same prior knowledge to a learning experience. The way we learn is as unique as their fingerprint.
- Socially constructed learning (*Johnson, 1981*): the collaboration, peer-tutoring and reciprocal teaching that occurs when students work together results in a deeper understanding of the material being covered.
- Differentiated learning (*Bloom, 1974*): the prior knowledge we all bring to a task means individuals require different levels of challenge, pace, content and context.
- Learning that is initiated by students themselves (*Ramey & Ramey, 2004*): typically when a student initiates a learning experience or exploration, they learn more.
- Learning that is connected to the physical world and authentic contexts: children learn through interaction with others and the physical world (*Malone & Tranter, 2003*). I observed a lesson recently where students had to construct a bridge 30cms to span a 30cm gap and hold as much weight as possible – all out of ice block sticks and a hot glue gun. Those students were totally engaged in that task combining physics with maths and critical thinking. It was a lesson enjoyed by all with the winning design holding 70kg before crashing to the floor.

What is 21 Century Learning?

How should education be structured to meet the needs of students in this 21st century world? How do we now define “School”, “Teacher” “Learner” and “Curriculum”?

Schools in the 21st century will be laced with a project-based curriculum for life aimed at engaging students in addressing real-world problems, issues important to humanity, and questions that matter.

This is a dramatic departure from the factory-model education of the past. It is abandonment, finally, of textbook-driven, teacher-centered, paper and pencil schooling. It means a new way of understanding the concept of “knowledge”, a new definition of the “educated person”. A new way of designing and delivering the curriculum is required.

We offer the following new definitions for “School”, “Teacher” and “Learner” appropriate for the 21st century:

Schools will go from ‘buildings’ to ‘nerve centers’, with walls that are porous and transparent, connecting teachers, students and the community to the wealth of knowledge that exists in the world.”

Teacher - From primary role as a dispenser of information to orchestrator of learning and helping students turn information into knowledge, and knowledge into wisdom.

The 21st century will require knowledge generation, not just information delivery, and schools will need to create a “culture of inquiry”.

Learner - In the past a learner was a young person who went to school, spent a specified amount of time in certain courses, achieved national qualifications and then were able to move on to tertiary study. Today we must see learners in a new context:

First – we must maintain student interest by helping them see how what they are learning prepares them for life in the real world.

Second – we must instill curiosity, which is fundamental to lifelong learning.

Third – we must be flexible in how we teach.

Fourth – we must excite learners to become even more resourceful so that they will continue to learn outside the formal school day.”

What are the differences between a traditional learner – which most teachers can associate with, and a 21st century learner?

21st Century Learner	Traditional Learner
Learner as the centre of instruction	Content as the centre of instruction
Educator as a coach, mentor, guide, resource and lead learner	Teacher as the expert and deliverer of content, tests, assignments and discipline
Use of the internet to get pluralistic, broad perspective of a topic	Use of a single textbook to teach the subject
Failure and mistakes are seen as part of the learning process	Perfection is explicitly and implicitly expected by and for both students and teachers
Differentiated and personalized curriculum	One size fits all curriculum
Ongoing, formative assessments for and by students to increase learning	Summative assessments for accountability of teachers and the school
Learning is multi-sensory, hands-on, authentic and relevant	Learning is typically only focused with only the brain in mind, sometimes not seen as relevant by the students
Learners produce as well as consume content	Students spend most of their time consuming content created by others
Learners doing more talking and working than the educator in class time	Teachers do most of the work and talking during class time
Technology seamlessly integrated into the curriculum	Technology as an add-on, specialty or after-thought
Misbehaviour is viewed as an opportunity for growth and often resolved through group effort	Misbehaviour is disciplined by the teacher
Social emotional learning is seen as integral to educating the whole child	Social emotional learning minimally or not integrated into learning.

Gerstein 2014

Pipe dream or possible reality?

Imagine a school in which the students – all of them – are so excited about school that they can hardly wait to get there. Imagine having little or no “discipline problems” because the students are so engaged in their studies that those problems disappear. Imagine having students with newly found enthusiasm and excitement for school, a desire to work on projects, research and write after school and on weekends. Imagine your students making significant growth in their basic skills of reading, writing, speaking, listening, researching, scientific explorations, maths, multimedia skills and more. Imagine having parents calling, sending notes, or coming up to the school to tell you about the dramatic changes they are witnessing in their children.

The introduction of ICT in our learning programmes has made this very possible and I recently had a reliever tell me about a lesson they took for a sick teacher where the students were working on One Note. Every student knew what they had to do and there was clear differentiation in the learning. Students were engaged and took responsibility for their learning. What a seamless learning experience for those students and not interrupted because their teacher was ill. I imagine we have all heard of some relievers struggling due to the mindless work left for them to do with classes but in this case the learning continued.

Can we achieve this? Yes we can but we have a lot of thinking to do and we must be prepared to make the change. Our school (and schools across the country) is full of amazing committed teachers who genuinely want the best for their students. For many, it is the pressure of completing course requirements and assessments that gets in the way of them teaching in a different way – one that students would probably prefer. I fully accept the huge demands on teacher time for the administrative aspect of their role and how this restricts their professional thinking time.

We do need to make changes but we need to manage that change so teachers see it as achievable and not just another ‘straw’ on their already overloaded backs. If these changes are to be effective, we need to include student voice and establish what students want and then look at how to blend that with what is possible for teachers.

A recent tweet I received proposed the following list;

- Students want teachers that actually spend time getting to know them
- Students want a voice in the learning process and want to be able to share their way of doing things
- Students want to be treated with dignity and respect
- Students want to be appropriately challenged with meaningful and relevant learning experiences
- Students want teachers to know that they too have off days
- Students want their interests and passions to be infused into the learning that occurs in the classroom
- Students want their teachers to be truthful and honest
- Students want their teachers to be partners in the learning process and show they appreciate student prior knowledge.
- Students want to know that what they are doing today will have some relevance tomorrow

What is 21st century curriculum?

So what will schools look like, exactly? What will the curriculum look like? How will this 21st century curriculum be organized, and how will it impact the way we design and build schools, how we assess students, how we purchase resources, how we acquire and utilise the new technologies, and what does all this mean for us in an era of standardised testing and accountability?

There has been much written and spoken about 21st century curriculum and 21st century learning. Twenty-first century curriculum has certain critical attributes. It is interdisciplinary, project-based, and research-driven. It is connected to the community – local, state, national and global. Sometimes students are collaborating with people around the world in various projects. The curriculum incorporates higher order thinking skills, multiple intelligences, technology and multimedia, the multiple literacies of the 21st century, and authentic assessments.

The classroom is expanded to include the greater community. Students are self-directed, and work both independently and interdependently. The curriculum and instruction are designed to challenge all students, and provides for differentiation.

The curriculum is not textbook-driven or fragmented, but is thematic, project-based and integrated. Skills and content are not taught as an end in themselves, but students learn them through their research and application in their projects. Textbooks, if they have them, are just one of many resources.

Knowledge is not memorization of facts and figures, but is constructed through research and application, and connected to previous knowledge, personal experience, interests, talents and passions. The skills and content become relevant and needed as students require this information to complete their projects. The content and basic skills are applied within the context of the curriculum, and are not ends in themselves.

Assessment moves from regurgitation of memorized facts and disconnected processes to demonstration of understanding through application in a variety of contexts. Real-world audiences are an important part of the assessment process, as is self-assessment.

What are 21st century skills?

The 21st century skills are a set of abilities that students need to develop in order to succeed in the information age. *The Partnership for 21st Century Skills* listed them as;

Learning Skills

Critical Thinking
Creative Thinking
Collaborating
Communicating

Literacy Skills

Information Literacy
Media Literacy
Technology Literacy

Life Skills

Flexibility
Initiative
Social Skills
Productivity
Leadership

So to bring the various aspects of my study together, how could we achieve 21st Century learning in 20th Century rooms?

Our challenge is to continue to support teachers to develop their pedagogical confidence to meet the challenge of 21st Century learning. This will require;

Teacher collaboration focussed on supporting peers and freely sharing good practice.

PLD involving the active and direct engagement of teachers particularly in practising and researching new teaching method.

The school adopting a culture with a common vision of innovation as well as consistent support that encourages new types of teaching and teachers prepared to experiment.

What could be the profile of a 21st century modern teacher?

Someone;

- Not restrained by either a tightly prescribed curriculum or over assessment.
- Who accepts that the memorisation of knowledge is not the most important skill but that the manipulation of that knowledge is?
- Content to not only provide students with the problem but give them support to work towards the solution.
- Who shares good practice with their colleagues and looks to learn from them.
- Who uses feedback effectively and who can also receive feedback from their students.
- Don't mind not fully knowing what is going to happen
- Models resiliency and perseverance
- Sees themselves as co-learners not just teachers
- Steps outside their comfort zone and into their student's world even if it is foreign

The research I have undertaken clearly describes the 'what is required?' and now my (our) challenge is the 'how we do it?' I am very aware of the need to give staff not only time but to also show an understanding of the other pressures they face in the current system. I have absolutely no doubt there is a strong will among our staff to do the best for their students and we have a number of real leaders. These people need to be given the opportunity to explore and lead change while being supported by the school Executive and Board. We need to also look closely at new appointments and make sure we are employing people who have the vision and drive to achieve change for their students. We do face an aging teaching workforce and for many of them (us) it is challenging however we simply can't afford to not accept that challenge. We are in a fortunate situation with a school population who is overwhelmingly engaged and supported from home. They have come to us from contributing schools that are probably further down the path to change than secondary schools and we must ensure we do not lose their creativity and inquiry in their learning and look to how we could use the resources around us to maintain this digital generation's search for knowledge, relevance and meaning.

The challenge is in front of everyone involved in education or more importantly, learning and I believe we need to look at the following slightly tongue in cheek but also probably accurate metaphor describing how teachers might respond to the need for change.

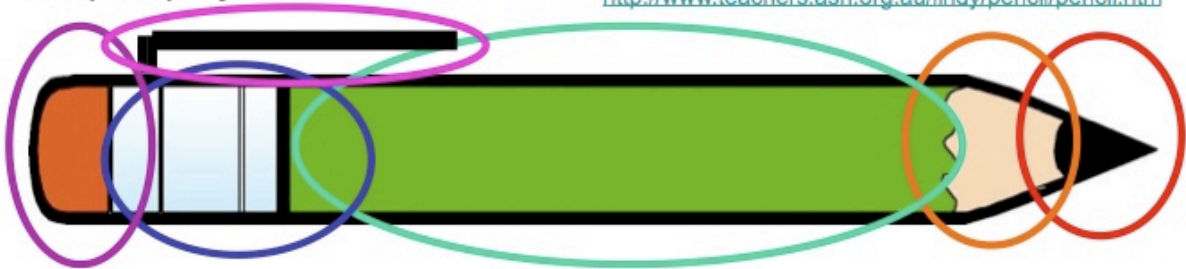
The Hangers-On

Hangers-on know all the right lingo, attend all the seminars, but just don't actually do anything.

The Pencil Metaphor

Adapted from:

<http://www.teachers.ash.org.au/lindy/pencil/pencil.htm>



The Erasers

These people endeavour to undo much, if not all of the work done by the **leaders**.

The Ferrules

These people hang on tightly to what they know. They keep a strong grip on their traditional teaching practices and feel that there is not a place for the technology in their classroom.

The Wood

These people **would** use the technology if someone **would** just give them the gear, set it up, train them and keep it running. All they need is help from some sharp person and they **would** be doing it too.

The Sharp Ones

These are the people who see what the early adopters have done, willingly grab the best of it, learn from the mistakes of others and do great stuff with their students.

The Leaders

These people are the first to take on the technology, the early adopters who usually document and enthusiastically share what they have tried, warts and all.

For the sake of our students, we need to convince the 'ferrules', challenge and encourage the 'wood' support the 'sharp' and reward the 'leaders'. The others need to realize there is little place for them in a modern learning environment. As an educational leader, that is my challenge and one I look forward to.

Peter Leggat: July 2015

Personal Acknowledgements

I would like to thank the Board for their support of my sabbatical. I would like to acknowledge the superb job Penny Kinsella did as Acting Principal in my absence well supported by Warren Henderson and Janet Glenn, our DPs and Rachel Parsons who stepped up into an Acting DP role.

After 4.5 fairly demanding years, I believe this sabbatical came at just the right time and I look forwards to leading the school in the next few years re-energised and re-focused on my role as an educational leader. Too often Principals comment on how the ever increasing administrative aspects of their roles prevent them from being the educational leader of learning that we want to be. This sabbatical has given me the chance to re-align my priorities and focus on being that leader of learning.