To investigate modern learning environments and their effect on student achievement.

This topic was chosen as my school, Lepperton Primary, is facing a complete rebuild due to extensive leaky building issues. My goal was to research modern learning environments and to discover if there was any concrete evidence that they were making a positive [or negative] difference to student achievement.

In all my reading I did not find any concrete evidence. I discovered a lot of theory and opinion but no cold, hard data. Therefore I decided I needed to visit the actual schools that either had new modern learning environments or had transformed traditional single-cell environments into modern learning environments.

For the purpose of this investigation I define a "Modern Learning Environment" as

' Spaces fit for 21st Century Learners. As much as it is about buildings, it is about creating learning spaces that promote student self- management of their learning, student engagement and connected to real life problems and situations. It is about modern technologies and spaces that enable students [and teachers] to learn [and teach] in a variety of ways."

INTRODUCTION: A SYNOPSIS OF LEPPERTON SCHOOL AND MODERN LEARNING ENVIRONMENTS

In 2006 we introduced a school focus on the Key Competencies. This included Self-Management Timetables, students learning about their learning, Students being actively involved in all aspects of their learning [i.e. planning, activities, assessment, evaluations]

To extend this teaching and learning philosophy and to take our self-managing students to the next level we created room 56. We knocked holes in walls and joined two classrooms together [56 students] and two teachers who would work in a collaborative role. We purchased modern furniture [and kept the old], inter-active whiteboards and increased the number of ICT devices in the room.

We were met with a backlash of a concerned and in some cases disgruntled community. No other school were doing this in Taranaki. The Board of Trustees were behind this philosophy as were the Education Review Office but felt they needed some hard data to support them in defending the initiative,

Our focus had been on the development of the Key Competencies and we could prove that our students were well advanced in these learning areas. However we decided to collect and analyse Literacy and maths data. The results were extraordinary. Below is a brief overview of this data.

LITERACY: 2008 AVERAGE PAT STANINE 4.95 [as year 4 students]
2010 AVERAGE PAT STANINE 6.05 [as year 6 students]

MATHEMATICS: 2008 AVERAGE PAT STANINE 4.1 [as year 4 students]
2010 AVERAGE PAT STANINE 5.0 [as year 6 students]

Although this data showed significant improvements for the same individual students, the averages were relatively low [5.0 being the national average]. By 2012 our averages had climbed to between 6.5 to 7.5 for year 6's in both Literacy and mathematics.

2014: the senior room [two classes] move to two traditional learning spaces with large doors that can be opened [and mostly are] or closed in order to create one big barn-like space or two learning spaces. Traditional individual desks line the walls creating a large collaborative space with more modern furniture in the middle. The best of both worlds is evidenced here. Collaborative teaching is also evident in the junior rooms with the old room 56 being used and two teachers team teaching. Currently there is no evidence of the modern learning environment philosophy in relation to physical space in the middle school.

KEY FINDINGS OF INVESTIGATION INTO MODERN LEARNING ENVIRONMENTS.

In my opinion for modern learning environments to be as effective as I believe they can be the following TEN? are essential. I have called them *THE TEN ESSENTIAL INGREDIENTS OF MODERN LEARNING ENVIRONMENTS.*

THE TEN ESSENTIAL INGREDIENTS OF MODERN LEARNING ENVIRONMENTS

1.RELEVANT PEDACOGY FOR 21ST CENTURY LEARNERS
A focus on Learnacy as our core curriculum. The current New Zealand Curriculum sets an excellent basis providing the focus is on the Key Competencies and the Principles. This should embody all aspects of the learning programme including assessment. It includes a focus on developing self-managing, thinking and relating skills.
Our Lepperton School vision " It's all about Relationships. Relationships with ourselves, with others and with our learning" encapsulates this AS LONG as it is the FOCUS OF OUR LEARNING.
Students need to learn how they learn, how they think, and how they can use this to develop their own learning. They need to develop the skills, knowledge and attitudes needed to effectively evaluate their work and develop consequent learning.
A typical learning programme would see Self-Management Timetables as a focus, students planning learning, assessing learning and evaluating learning. Learning would be authentic to real-life and embrace all learning styles and Multiple Intelligences.
All of the above would be scaffolded from year 1 to year 13.

2. THE RIGHT TEACHERS
Teachers must be learned in how we learn and the competencies needed for students to be successful in this school. They must be effective relaters

themselves, as they will be collaborating with students and fellow teachers. They will need to be able to relinquish the control of learning to students. This would be progressive as the students move through the years. They will need to be flexible and adaptable as teachers as this will be one of the necessary competencies of learning. They will share learning spaces and be able to move seamlessly between them. They will be open to new learning especially in the areas of I.C.T., modern brain research and how they directly influence learning programmes.

3. A CHANGE IN THINKING BY ALL STAKEHOLDERS

This relates directly to no.1 and no.2. Schools who have made efforts to develop these programmes have been hit with opposition from their communities. This is due largely to change dynamics and lack of knowledge. The school's board of trustees should have a designated person with this role. However, Schools can only do so much to address this hence…

4. MINISTRY OF EDUCATION SUPPORT AND PROMOTION

This would include 1.an advertising campaign delivering the change, the philosophy, the learning required to enable our students to be successful in the 21st Century.   2. Professional Development programmes that focus on Learnacy. This would include brain research, using modern learning devices, and student self-management of their learning, higher order thinking skills, learning to collaborate and relate to others.
                    3. Appraisal, Professional Standards, Education Review Office focus.   4. Charter, Strategic Planning and Targets focus
                    5. Extra funds made available for the above

5. FLEXIBLE AND ADAPTABLE SPACES

Learning spaces must be totally visible, totally adaptable. They must be able to be used as two, three or four collaborative learning spaces. This must be flexible as the make up of school rolls change, often on a yearly basis. Spaces need to be able to be created effortlessly for all different types of learning. For example silent work needs to be able to happen effectively at the same time as activity-based learning. Breakout spaces and/or nooks and crannies need to be created effortlessly when required.

Below is a list of different spaces needed to optimise learning opportunities? All students within the 'team' need to have access to these.

[a] Student home base
[b] Individual pod [place to think]
[c] Collaboration incubator
[d] Group learning space
[e] Presentation space
[f] Display space
[g] Project and wet space
[h] Outdoor learning
[g] Breakout spaces [i.e. one-to-one withdraw, teacher space]
[h] Resources supply and store

They need to be large enough to 'house' all this learning AND the furniture required for it.

6. MODERN LEARNING DEVICES

As a minimum all students from year 4 need have complete one-to-one access to an appropriate ICT device such as an I-pad or chrome-book. All learning spaces will have the same modern learning devices so disparities cannot negatively influence collaborative learning and/or teaching practice.

7. EFFECTIVE ACCOUSTICS

8. OUTSIDE/INSIDE LEARNING SPACES

Must be covered, waterproof and sheltered from the elements while allowing for natural sunlight into the inside learning areas. Artificial light should not need to be used inside on most days.

9. FURNITURE

Learning spaces need a variety of furniture. Students need to be able to lie, sit, kneel and stand. The furniture needs to be able to accommodate all the different types of learning, learning styles and preferences. There needs to be inside and outside furniture. All desks and tables should be whiteboards [or inter-active]. Furniture needs to comfortable, egornomical and of differing heights.

A last word on furniture. Do not under estimate the traditional desk. These are important as they give students their own space and are helpful in teaching them self-management skills. A progression on these would be to have the desk surface as a whiteboard.

10. CLIMATE CONTROL

The ability for the school and its students to control, monitor the learning spaces temperatures. This needs to be cost-effective, sustainable and environmentally friendly.

After finishing this research I was l left with the very strong feeling that there was, in fact, an eleventh key ingredient.

11. CHARTER SCHOOL

One of the biggest constraints on achieving the above is the Government and the Ministry Of Education. Not only are there significant financial constraints but their educational decisions are politically motivated and not what is always best for our 21st Century learners. In fact, many of these decisions oppose the above philosophy. My next investigation will be along these lines as I now believe this is a viable option open to educators who know there is a much better way to advance learning. We can be the best in the world but only if we are prepared to leave the shoreline... Those who dare...WIN.