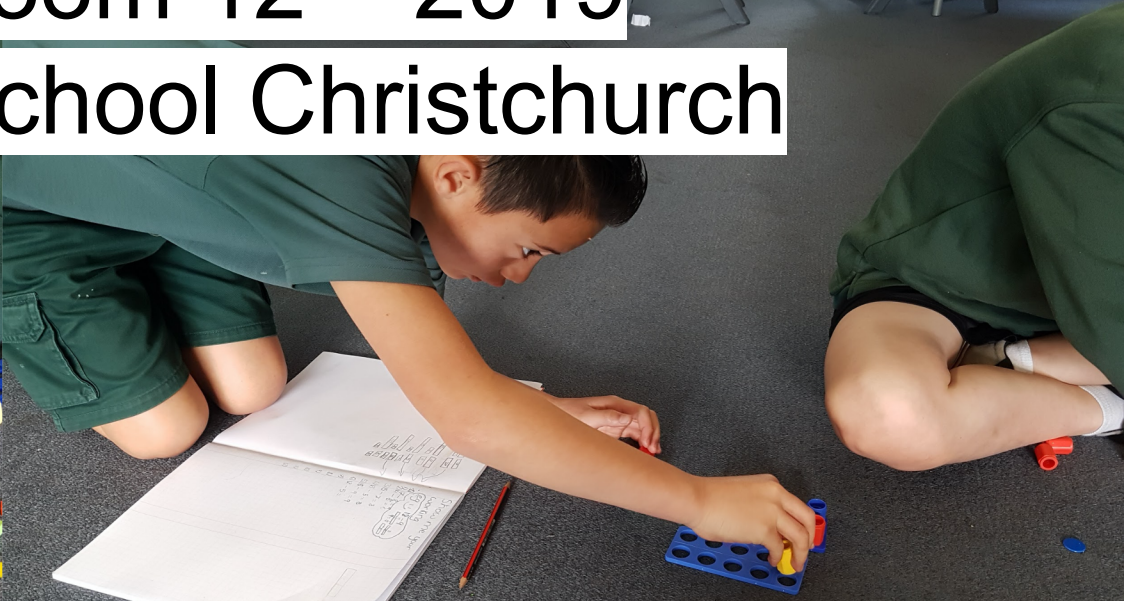




Numicon Room 12 – 2019

Linwood Ave School Christchurch



# Why did we decide to use Numicon?

We were constantly looking for ways to help our students who struggled with their maths. These children had been taught using the Numeracy Project. They were showing no, or very little improvement. It was obvious to us that the students needed **structured** materials to aid their learning.

We looked for a “bridging programme” for our real strugglers and this search lead us to Numicon.

Not only did we implement this bridging programme for our struggling learners, we introduced aspects of Numicon to all our learners, depending on the need.

# Data

Data pre and post learning

PAT results before and after

Bell curves for PAT results

1. Stanines allow your child's achievement to be compared with the performance of New Zealand students at a particular year level. Scores on the PAT scale (see section on scales) at each level are divided into nine stanines, one being the lowest performance and nine being the highest. The average stanine is around five. So the stanine gives you an idea of your child's achievement level in the context of their year group nationally.

# Jane -Reflections on the data - number knowledge

Mathletics data.

OTJ data

- OTJ based on class work, Gloss, and AsTTle maths. Reasons for using this data was to provide consistency of data for whole school data collection and trends.
- Data was collected on 30 students in my maths groups. Of these
  - 3 did not move
  - 12 moved up 1 sub-level
  - 11 moved up 2 sub levels
  - 2 moved up 3 sub levels
  - 2 had no comparative data.



# Reflections on the data -number knowledge - Keryn

- Children showed good improvements. They scored high in number knowledge. (Mathletics testing -see picture)
- Children did not score well in fractions (Gloss Term 4) because I hadn't taught them using Numicon

I have since taught this. By using the Numicon teaching programme and the materials they can now work out the answers because they *understand how to work out the answer*.

Material 'use' still makes them at NP Stage 5 however they *understand* what is now being asked and can solve the fraction problems. They are all making progress with confidence.



# Comparisons

## Pre Numicon 30 students

- 12 moved up 1 sub-level
- 11 moved up 2 sub-levels
- 2 moved up 3 sub-levels
- 2 had no comparative data
- 3 did not move (SEN)

## Post Numicon 26 students

- 8 moved up 1 - 2 sub-levels
- 23 moved up 1-3 sub-levels
- 7 are 1 sub-level away from being at Curriculum Level
- 3 did not move (SEN)

# Positives from using Numicon in the classroom. Keryn

- I could get a real understanding of what children were thinking by watching them manipulate the equipment.
- The children were able to see others' 'thinking' by the way they used the equipment.
- The lessons flowed and connected in a very realistic way. The lessons were a cycle that build on knowledge learnt. (It made sense to teach 'time' after 'fractions'.)
- Very easy and clear to plan for the groups - following through the books and using the learning milestones for assessments.
- Book work, understanding and follow-up improved a lot (Also commented on by a reliever.)
- Having the Numicon on hand to solve problems made this improvement
- Children enjoy using the Numicon shapes and place value equipment. We loved the very pleasing improvement in number knowledge (as shown in mathematics results)
- Helpful for showing ESOL students' understanding of mathematical concepts.

## Positives from using Numicon in the classroom Jane.

- The speed at which an informal or cumulative assessment can be made, because you can see what students are doing.
- Very quick to troubleshoot misconceptions about mathematical concepts.
- A truly cyclical approach, where one step leads to another logically and all concepts are regularly revisited and extended, including strand.
- A year [programme](#) covers all requirements.
- Regular [milestone achievement sheets](#) make it simple to track progress. These are also directly linked to the New Zealand Maths Curriculum. (This made it possible to make links and comparisons).
- The number of lightbulb moments where students 'see' the concept as a concrete operation. This leads to understanding and working with abstract numerals.



## More Positives from using Numicon - Jane

- The durability of the equipment - none has broken.
- The flexibility of use to teach many concepts
- The ability to use one exercise to cover a multitude of ability levels. E.g. - a lesson on combinations to 20 had some students adding  $10+4+4+1+1=20$ , while some discovered BODMAS  $3+3+3+3+2+5=20$  which led to  $4 \times 3+2+5$  and a discussion on order of operations.

# Minuses with Numicon in the classroom. Keryn

- Cost of equipment and storage of equipment.
- At the beginning some students were too busy 'playing' with the equipment rather than using it for the purpose of the lesson.
- My group had a lot of missing information and gaps in their learning, this meant my lessons took longer than I had anticipated.
- School assessment does not align with Numicon cycle of teaching.

'Play' is a necessary start to becoming familiar with the shapes.

'Play' is a necessary start with Numicon to making connections with number concepts

The gaps are now closed and they are flying!

The formative assessment approach is more effective and meaningful

# Minuses with Numicon in the classroom - Jane

- The depth of understanding of what students were doing was evident, but did not translate to Gloss testing. (apples and pears) **Gloss belongs to a different programme. It's only a test of mental strategies not of mathematical concepts and using them to solve problems.**
- The cost of equipment, books and training. **There are creative ways around this. Contact Edushop**
- Learning from an introductory course, YouTube and the numicon facebook page, as well as interpretation of the manuals and books purchased, meant that I was having to work hard to familiarise myself with lessons and make activities every week. I was learning alongside the students. (This is a positive as well). **They are all made ready for next year!**
- Initially some students were distracted, playing with the equipment. It was necessary for them to have some time to experiment and notice for themselves what it represented. This meant rationing gear and less hands-on for lessons.

## Continued Minuses with Numicon in the classroom - Jane

- Some students, the three highest achieving in the class, were not extended by Numicon. They already had a high knowledge in the abstract, and my lack of knowledge for using numicon at a higher level meant I didn't have the skills required to extend them. They used some numicon, but mostly followed the numeracy project. This will change over time. Using materials confirms their thinking and helps them go to higher levels later on. It also enables them to explain their thinking and develop their literacy skills.



## We were surprised by...

- The students' lack of very basic number knowledge and understanding.
- The students who were at NP Stage 5 didn't know odd and even numbers.
- A lack of understanding of number sentences and their families.
- A large number of students who didn't understand ordinal numbers.

AND

- The huge range of math concepts that Numicon covered from simple counting to fractions and decimal numbers as well as Geometry Measurement and Statistics.



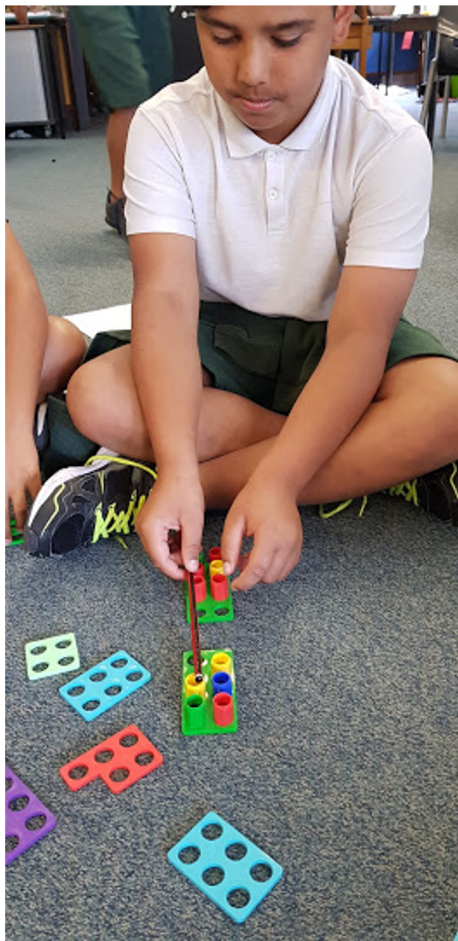
# First day photos. We're smiling!

Early on, when exploring the numicon shapes, I asked students to show me '100'. It was clear very quickly who had a grasp of the Base 10 System. They made combinations to '10', then counted these to make '100'. These students could quickly make combinations to 10 and could count in multiples of 10. They had a good 'number sense'.

Some groups started with grouping all the 1's, then the 2's, then the 3's.....

They then tried to count to see when they had 100, but lacked a system to do this quickly.

They were not confident with combinations to 10 and this gave me a starting point for them.

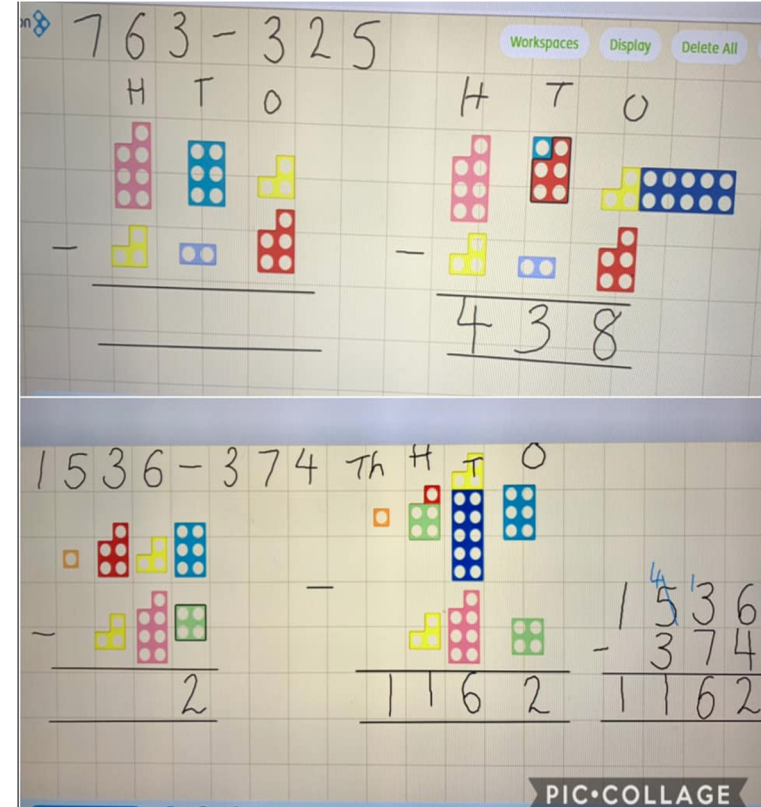
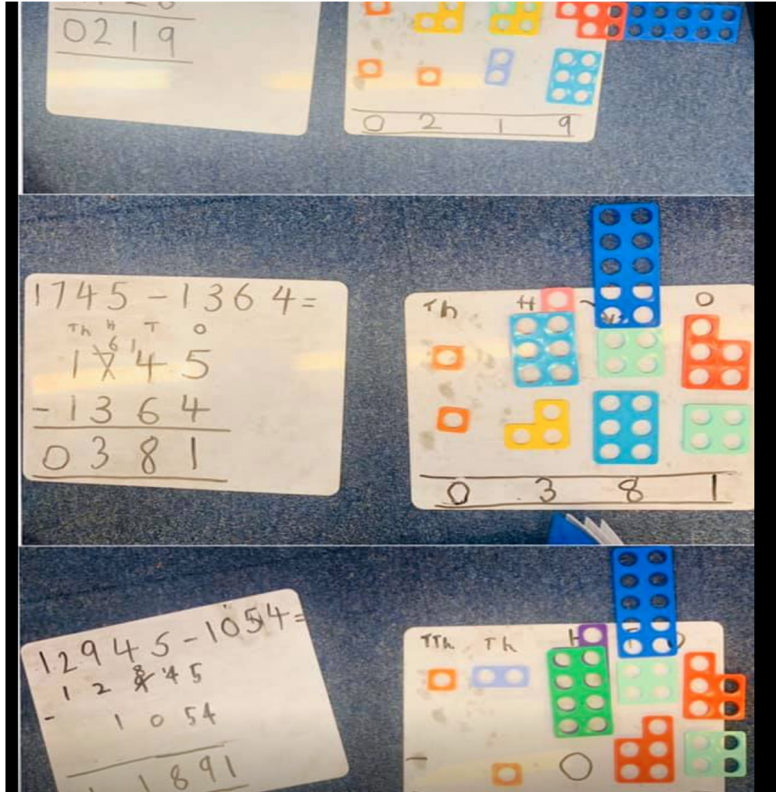


Using Numicon shapes to add and subtract fractions with a common denominator

Using Numicon to explore and find simplified fractions.

Quote from Tasi -" *I didn't get fractions, but now I see it*".

WOW! We covered so much and loved it!





# Where to from here?

Share our review with the team.

Continue using Numicon in Rm 12 **with greater confidence and enjoyment, helping those who did not make progress to understand their own learning journey.**

Visit Chch schools in first month of next year. **St Patrick's Bryndwyr**

PD for Jane, Keryn and Harriet. **Go to Louise Pennington's course in April/May**

Develop a plan for school moving forward. ***We really want our junior classes to implement Numicon. Imagine where our Year 5's would be then!***

**Invite Margi from Numicon NZ to visit as often as she can**

So I like the numicon because it helps us learn and if were stuck on a problem it helps us say if i had to do  $35+78$  i would put 10 numicons down that are ten i would put ten tens down and one 8 and one 5 down.if we put it all together it would make 113 so if you put them together it would make that number.that's why i like it it comes in handy when you're stuck or you can figure the answer out that's why i love numicon they really help you.

I think that the numicon is a great idea. It can help with all sorts of maths like division, multiplication, fractions and much more.

It makes math more fun and easy for me and, I think it could do the same to others too. It would be a great idea to keep this type of math learning going.

I like numicons because they help me with a lot of maths. They help me work out equations and sometimes my time tables. I think they would be a good thing to use if some people don't are struggling with their maths. When I am struggling with my maths my friends are busy sometimes I use the numicons to help. I am also proud the way am using them

## NUMICON REVIEW

Numicon is good for me because it helps me with big numbers in additions,subtractions and fraction and help me to do the odd even because I put it like a Stairs

In maths we use numicon for all sorts of different this like...Our fractions and bigger numbers like 100 minus 14 equals 86.I like numicon because it helps me when I don't know.I really think that numicon macks maths really fun and easy for people how find maths hard.I also like maths now because numicon made it sound fun and easier.

I like it because it makes hard maths a bit [easy](#) and it helps me Alot and makes math fun

What I feel about numicons, is quite positive. It helps a lot with my maths, any kind of counting subject numicons always help. We used to use rainbow sticks but it isn't the same as numicon since its numbers connected, and not just one. It makes your quick maths better since all the numbers are in one and instead of counting like, 1, 2, 3, 4, etc. What I'm trying to say is that numicons are very helpful, and I'd love to use more of it.

By Isabelle

What do I think of numicon? Well numicon is help full for sutton things depending on the person. For me numicon is help full for my fractions. It helps by the different numbers and shapes on the numicon. It helps because the object is right in front of me and then I can split them up and once I learned how to use the numicon I got better and now I can just do in my head. I like numicon because it helps with other learning but the fraction piece was probably the most help full.

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I think that the Numicons are a good thing to work with.

They help with examples and explanations, counting in all different ways like, counting in 2s or 5s or 25s and even times.

I think they are good for helping us focus more on the subject, but at times it doesn't help much with focus, sometimes it will distract us from the task that we were set with or are supposed to be listening too.

It's a good thing that we have them, I think that for many reasons, I think that it has really helped with some people's learning and I hope that we continue using them.

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**By Isabelle**

### **Numicon review**

I like using Numicons because it helps me learn the times tables that I don't know faster. They also help me with my fractions because you can easily cover the holes with your fingers. Covering them up with your fingers helps a lot and makes it easy to count. They can help make big numbers like 50. I also hate numicons because they are too big and it takes up a lot of space they are also really messy.

Using my numicons help me because if I had a ten I could fill it up with other numbers and it equals ten. Numicons helps me when somebody asks me a math question and I imagine it in my head when we play survivor but sometimes it takes too long if its a long question like eight plus seven plus ten so it takes a while to figure out the answer. I also use blocks but I think numicons are better



**I like numicons because they help me with a lot of maths. They help me work out equations and sometimes my time tables. I think they would be a good thing to use if some people don't are struggling with their maths. When I am struggling with my maths my friends are busy sometimes I use the numicons to help. I am also proud the way am using them**

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What do I think of numicon? Well numicon is help full for sutton things depending on the person. For me numicon is help full for my fractions. It helps by the different numbers and shapes on the numicon. It helps because the object is right in front of me and then I can split them up and once I learned how to use the numicon I got better and now I can just do in my head. I like numicon because it helps with other learning but the fraction piece was probably the most help full.

Numicon is helping me with my maths. I like using it with my activities in math, like fractions. So numicon is important in math.

I am not a fan of numicons but they can be helpful with division, fractions and subtraction. It helps with division because if the teacher said 10 divided by 2 I would just get a ten and stick some 2's on. Numicons are helpful for subtraction eg 20

So I like the numicon because it helps us learn and if we were stuck on a problem it helps us say if I had to do  $35+78$  I would put 10 numicons down that are ten I would put ten tens down and one 8 and one 5 down. If we put it all together it would make 113 so if you put them together it would make that number. That's why I like it it comes in handy when you're stuck or you can figure the answer out that's why I love numicon they really help you.