

ECIE5002

NUMBERS COUNT

PORTFOLIO

6 ELEMENTS

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Element 1 – Blog

Numbers everywhere??



Numeracy is used in all parts of our daily lives, from when we are children through to adulthood and in all kinds of situations. Numeracy is the skill to understand and apply maths in school, further education and also in the workplace. It gives us essential life skills to solve problems, to process information and to also make decisions (National Numeracy, 2023).

In some situations, you would not realise you were actually using maths as it's not the standard addition, multiplication etc. Other situations when we use maths are:

- Giving the correct change
- Weighing and measuring
- Telling the time
- Understanding timetables
- Working out how long until our train arrives
- Working with graphs and charts
- Partaking in sport (e.g., working out an average run time)

Does the above actually surprise you??

Cockcroft Report

In 1982 the Cockcroft report was published by Dr WH Cockcroft who states that "Mathematics can be used as a powerful means of communication – to represent, to explain and to predict" (Cockcroft, 1982, p. 17) This report outlines the need and importance for children to understand mathematics in enabling them to utilise the skills they have learnt and put them into practice in other subjects as well like geography, economics and business - when in school, in further education and employment making it similar to literacy where they are both a starting platform essential for life.

Your school experience

Thinking back to your school days, how was your experience of maths? Was it a positive one? My experience like many others was an awful one, although many would disagree being schooled in the 21st century. The way maths is taught and also the way teachers behave now has changed quite dramatically, for the better, I might add!

Paulo Freire (September 1921-May 1997) was a Brazilian Theorist who encouraged learners to think for themselves, allowing Freire to 'set the scene' in the first instance and then resulting in the learners to problem solve and think creatively outside the box. Discussions between others are essential for this to happen to create inclusive and confident learners. (Caballero, 2022)

The Bath and Nottingham report that was undertaken as part of the Cockcroft Report found that the people involved in this study had two opinions on Maths. One was the content and the other was the way in which it was taught. (Cockcroft, 1982)

However, it revealed that the most widely agreed point within the study was that the teaching of algebra and the confusion that it brought with it. I can clearly remember being in school and expressing my views to the teacher that algebra was pointless, and I would probably never use it once I left school. This was extremely accurate, even though the teacher was not very impressed by my opinion.

Curriculum

Maths and Numeracy (apart from Literacy) is a key part of children's learning and one of the four purposes of the new curriculum for Wales. (Welsh Assembly Government, 2020)

In 2015 a review was undertaken by Professor Graham Donaldson namely 'Successful Futures' where he states that 'Literacy and numeracy are universally acknowledged to be the essential foundations of education'. And therefore, a curriculum is essential in education to show a unified approach with consistency throughout. (Donaldson, 2015, p. 20) Children will see numbers and use numeracy in pre-school during play on a very basic level and gradually increasing with difficulty as they move up the school.

Back in the day



Back in the day in around 1792 B.C. an 'abacus' was used to count and perform all other mathematical calculations. It was used by the King of Babylon who would

calculate grain and how much taxes he was owed as a result. Most small children in the current day have either one at home or there is one in the Nursery they attend. (Magnify Mind, 2022) This where it all started!

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Element 2 – Blog

Schools playing their part!



Making a difference

Schools should be ensuring that the experiences offered within the school are exciting, fun, accessible and engaging (Welsh Government, 2020).

By using/offering:

- Activities which are age appropriate and interesting
- Utilising the outdoors as much as possible as well as the indoors but ensuring that the outdoors offers Vygotsky's Zone of Proximal Development (Cherry, 2023) in supporting children in the outdoor area with a more knowledgeable other, otherwise they will just 'play'
- Ensuring there are activities where children can engage in group work with their peers as well as individual tasks, to get used to them doing both
- Ensuring there is numeracy in every area
- Engaging in Forest Schools

Within secondary schools, especially subjects like maths it should be taught by qualified Maths teachers. This wasn't the case when my daughter was in secondary school and I do believe that she lacks the understanding and concept of maths as she was taught by someone who was not an expert in that field. Our children are being failed and let down in their education by this and should be the role of the school to ensure this doesn't happen.

Ensuring schools play a huge part in the correct teaching of numeracy is essential. If this does not happen, when we grow into adulthood, the following may occur (National Numeracy, 2023).

- Poor employment opportunities, as most jobs will include numeracy of some sort, whether it be giving the correct change or working out an average of something
- Insufficient knowledge in respect of budgeting and financial affairs, including the understanding and paying of bills
- Health and Wellbeing
- Even before adulthood, there is a more likely chance that children can face exclusion from school

Parents

It is imperative that parents are involved on a regular basis regarding their child's education. Some do not understand the methods used and therefore lack confidence. Or on the other hand, parents could be backing up what the school is doing, even if it is just simple everyday maths problems with their child.

Why not give parents the information to enable them to help and assist their own children when at home? Websites like www.oxfordowl.co.uk are extremely useful for both literacy and maths to give parents a little help in supporting their child at home (Oxford Owl, 2023).

Assessments – What are they??

Assessments within the classroom should be ongoing and should gauge how much information the child is actually absorbing and taking on board. Assessments will ascertain the needs, abilities, development and interests of the child for further support needed and future planning for that child. This also ensures that the teacher is aware of the progress that is being made throughout the year if the parent contacts for an update or speaks to them at parents evening.

2 main types of assessments are Formative and Summative.

Formative assessments are usually undertaken during the course of the term and is ongoing. This can include:

- Questioning – Find out if the child knows what you have been discussing or learning that week or that term. Recap on the previous day!
- Feedback – giving feedback to the child, so they are aware of what they need to do to improve. What could be done to ensure it is even better next time?
- A quiz or even doing a task working in pairs for example like a number grid

Summative assessments tend to be more formal and will be undertaken at the end of a topic or end of a half or full term and can include:

- Baseline assessments, phonics assessments, reading assessments.
- Observations, a written task

Even though these assessments are only a snapshot of what the child can achieve at that given time, it creates a sense of where the child is and a guide to see how the child has progressed and what their next steps are (Laurie, 2022).

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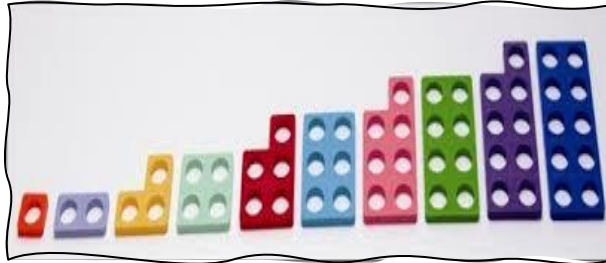
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Element 3 - Information Sheet

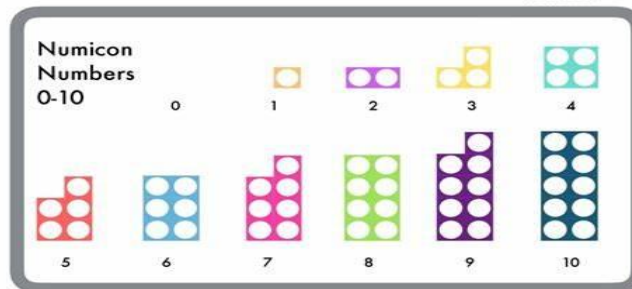
Information Sheet

Numicon



What is Numicon?

Numicon is a set of colourful plastic shapes which are flat with holes and each piece representing a number from 1-10 (shown above) (The School Run, 2023). They were developed by Oxford University Press in the 1990's to assist children develop a better understanding of numeracy and be able to build on their maths skills.



How do you know whether progress is being made? How is this progress measured?

Observations through looking and listening are made by Teachers and Teaching Assistants to see if the child has understood the concept and if so, you would then push them onto the next stage, all the while having a 'positive impact' on the child (The Dyslexia Shop, 2023).

Children learn so much better when they can see something physical rather than it just be written down. Oxford University Press state that "has been proven to have a positive impact on children's enjoyment as well as giving them the confidence to demonstrate how and why they arrived at their answer". (Oxford University Press, 2023)

What Skills are acquired?

- Multi-sensory way of learning
- Develops a child's understanding of numeracy
- Counting
- Calculation
- Ordering
- Reasoning
- Make connections between numbers (one less/one more)
- An understanding of patterns and shapes
- Using number bonds

Can the learner use it as a self-assessment tool?

Self-assessment is vital in a child's learning and development and the learner can look at their progress, reflect and move forward, while giving them the confidence to solve the numeracy task.

Numicon is intended to assist children of all ages and abilities from EYFS. KS1 and KS2.

Children will learn to be aware that: 1 ten piece weighs exactly the same as 2 five pieces.

Children can look at each piece and work out that the next 'piece' contains one more hole than the last one (Structural Learning, No date).

Who are the resources for? Any barriers to learning?

The age range intended for its use is Early Years and Reception age children in particular.

Numicon can support all children and in general can assist some children with additional needs. However, the barriers to learning would be;

- Unwillingness to learn
- Child's ability is not allowing
- No understanding of the concept



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Element 4 - Video

Link to video:



ECIE5002 Numbers
Count Element 4.mp4

Element 5 – Evaluation of resource

Numicon is multi-sensory resource made for children within Early Years to support their learning in the development of numeracy and mathematics. It assists children with the skills they need as they grow into adulthood enabling them to see the relationship between numbers and have a better understanding of maths. (The School Run, 2023). Children's learning is enhanced when they have something abstract to hold, and are able to visualise an object, this is true for adults alike. When we can picture something, hold something, it makes it easier for us to remember it than if it was just spoken about.

While filming the video of the resource, I was working with 3 children, all with varying abilities. I felt the activity went well and the children were really engaged and having fun. Maybe next time, I would possibly use 2 children, as I could speak to them more on an individual basis within the 3 minutes, although I felt it worked well. I did come to a conclusion that the child who was less able was helped along by the other children in understanding the activity and completed it very well (Bates, 2019, pp. 50-51). Piaget (1896-1980) suggests that all learners work well in groups with their peers and should work together often to support each other. One child will know

something the other child doesn't and visa versa allowing them to arrive at a solution.

It was a good starting point for the children to use the resource in Reception class in 'adding two numbers together' and especially children with additional learning needs. All the children enjoyed the activity as you could see and hear they were having lots of fun. If children are having fun, they are learning which will enhance their understanding. Next time we do the activity, I would maybe try bigger numbers to 'add' together and/or maybe one more/one less activities, to move/push them on.

This activity can be repeated on a daily basis as it is set up within the tuff tray. Children can use it as they wish - on their own and with their friends and there will be a chance for the practitioners to call a couple of children out at any time to repeat the activity working with an adult. Making a note of the children's ability will then be a baseline to show what stage they are at, once this information is gathered, and progress has been made, the child can then be moved on to the next stage of learning and something more difficult to challenge them further.

Numicon will reinforce language skills when playing games and engaging in activities like we demonstrated in the video to increase their developmental understanding. It's a two way conversation, we talk and discuss with the children about the activity and the children then explain what they are doing, what is happening and using their problem solving skills is an excellent way to enhance their language skills too.

The numicon tiles are solid and robust and cannot be broken so they will last a lifetime which will assist children with their numeracy skills for years to come. Pieces will go missing but you are able to buy additional ones to replace these rather than buying the whole set again, making it a really cost effective activity once the initial outlay has been paid.

I particularly like the way the Numicon tiles are brightly coloured. It is enhancing and gives out an aesthetically pleasing experience for the child. Although this can occasionally prove problematic as some children will tend to just focus on the number tile 8, which is purple for example, and see no need to count the holes on the actual number tile instead. Some sets of numicon over the years have been made with just wood, where there is no distraction with the colours and children would have to work out the number tiles by actually counting the holes. This can be beneficial too.

On the other hand, some children cannot grasp and comprehend the concept of the coloured tiles that are different shapes and contain a different number of holes and wouldn't work for all children. In the very beginning, I can quite understand where some early years children with additional learning needs may not have started counting yet or use the tiles as whole pieces and therefore will not be able to perceive the idea of 'Numicon'. In that respect it would not suit all children and would need to be assessed at the time as to the ability and understanding of each child.

Numicon allows children to see and make patterns while linking these to numbers. Mathematical language is key to success in maths and numeracy where it can help with problem solving, and will benefit children as they grow.

There are also many other skills being used while using numicon, and these include:

- Counting
- Combination of number bonds

- Putting shapes in order
- Adding numbers together
- Identifying missing tiles
- The concept that each number is one more or one less
- Playing a game where the tiles are swapped around and each player has to place the tiles back in the correct place
- Matching
- Making patterns
- Looking at the size of different tiles

(Oxford University Press, 2010)

Numeracy is part of the Numeracy Framework alongside Literacy within the New Curriculum for Wales which was introduced in September 2022. The New Curriculum for Wales has been designed to ensure that all schools will study the same ensuring a consistency of teaching across the whole of Wales (Welsh Government, 2021). This curriculum includes 6 Areas of Learning and Experience that includes Mathematics and Numeracy as one area.

Within Mathematics and other subject areas such as Literacy, music, science etc, children need to learn for themselves with the support of a teacher (A more knowledgeable other (MKO) suggested by Vygotsky (Bates, 2019, pp. 48-49) and the pedagogical approach will instil problem solving skills exercised in all of these subject areas (Welsh Government, 2021). When using problem solving skills in any subject area of everyday life you are thinking creatively. Thinking creatively is so important to extend the abilities of children in identifying the solution and also justifying how they arrived at the answer. Rather than just learning these subjects and just memorising the facts given this encourages them to think outside the box and 'Learning becomes more meaningful and purposeful' (Attard, 2017).

Using open ended questions like Why do you think that is? Why do you think it's important? Tell me about? Tell me more? Getting children to explain and give you the information about the activity they were involved in the day before gives them a chance to explain in their own words what happened.

To conclude, personally I believe that numicon is a fantastic learning tool for children to understand numeracy. It is something physical to hold, which is unbreakable, colourful, purposeful, meaningful, educational and fun to use on their own, one to one with an adult, within a classroom environment or with their peers in a group. While all of this is happening, language is being used by everyone as they use it. They will discuss what numbers they have, problem solve, count, looking and asking what the child next to them has and also be thinking creatively all the while as they arrive at the answer.

There are so many games that can be played – not just the one in the video. There are cards, pegs, baseboards, zig zag book and shapes all to use as part of the activity. A fantastic all rounded educational resource.

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Element 6 – Reflection

This module – Numbers Count, consisted of 6 elements in total. Two blogs, an information sheet, an evaluation of the resource and a reflection of the whole unit. I didn't attend lessons within the IQ Building at all during this module. I joined on-line for all 4 sessions, which was during the month of January. The two sessions that should have been face to face – HG wasn't well and all students were online together and the second one, the weather was really icy and the road conditions were not great, so I didn't travel to Swansea. This would have meant that I was online along with 3 others and the rest of the students were either in the IQ building or not able to make that particular session. So each session for Numbers Count was online in my home – on my own and not along with my fellow students in one room, altogether.

As the 2nd session was due to be face-to-face and even though HG was not feeling well, she joined on-line and I was very grateful for this as we were not missing any sessions and I think other students would have had the same feelings aswell. Time is precious and it would have meant that I/we would have missed a session where we would have had to fit it in somewhere else.

Before the module began, I thought this module was going to be quite enjoyable but in fact I was very wrong. Looking at the content in the beginning, I felt it was a good and varied selection of blogs, videos and evaluations but still felt a little overwhelmed by it all, especially by the 2 blogs. We have completed a number of blogs previously, but they still don't get any easier as I tend to veer off on a tangent and it turns into an essay! I struggle to stay on task within the concept of it being a blog and the word count seems to be quite a lot. But like all other modules, I would give it my best shot and make a start in plenty of time.

Initially, and as I started, I felt very positive about the whole portfolio but it was evident that early on, this feeling had changed. I undertook lots of research but I found that I couldn't put anything down on paper (as the saying goes) and felt I was going around in circles and this was just the first blog.

The whole module proved to be a difficult one, although I did enjoy doing the information sheet and describing all about Numicon as I believe it is an excellent resource. I didn't feel that I was well informed during the sessions as one of the sessions we mostly spoke about last years work giving feedback for future students and how certain parts of the module can be improved. Some of the other students also felt this and thought it was a waste of our time as we needed the time to go over what we were doing for this module.

During session 3, a different room was used in the IQ building and the sound quality in both directions was not great. I/we couldn't hear anything that was being discussed and felt very anxious as I felt I was missing out. Myself and the 3 others eventually had to leave the session as it was pointless staying online with the current situation. HG sent a recording of the Monkton session to us so we could listen to that instead to 'catch up' which was very useful. Modern technology can be troublesome at times but it's so disappointing when it doesn't work as you cannot fulfil what you intended to achieve by being at the session, enabling you to have the best experience.

I began the module with the blogs as I like to start at the beginning but soon moved onto the information sheet as I found the blogs quite challenging. The information sheet was very pleasant to complete. It was quite time consuming ensuring all the boxes/pictures and text were in the correct place and the correct size but I thoroughly enjoyed it, and took my time to ensure it was right. I enjoy the whole graphics experience and creating something colourful and informative at the same time.

I was getting on well with my portfolio, working my way through each part. I then received an email saying we had an extension, and we had another week until we needed to submit. Although I was doing well, this was a weight lifted off my shoulders as I had been so busy trying to complete it by the 5th. It meant that I went shopping with my husband to have some well-being time as I was getting very stressed and needed some 'time out'. Sometimes it can all become too much and you can't see the wood from the trees.

Thinking back to my school days and in particular my Maths lessons, it wasn't a good experience. My teacher was awful. He was not very approachable, and I was frightened of him, leaving my confidence of numeracy very low. He would shout and scream at our class, normally at the class clowns and I didn't engage at all. I would never want to ask any questions if I didn't understand and left school with an average amount of knowledge. Les Vygotsky's (November 1896 – June 1934) theory (Cherry, 2023) suggests that teachers should support, guide and encourage children through every step and arm them with problem solving skills in every

aspect to aid their success (Mcleod, 2023). Clearly and sadly this wasn't the case during my lessons at school.

This module has given me a great deal of confidence and knowledge with Numeracy in general and especially Numicon, The New Curriculum and to support children with their problem solving skills.

I learned quite a lot from these sessions. Not so much academically in the fact that being face-to-face does work better than being on-line. Even though I am extremely grateful that this course is half face-to-face and half online makes it logistically easier for busy lives and especially myself not residing in the Swansea area. It would not be possible for me to attend every session in Swansea. It would be a good idea for each session to use the same room in the IQ building as normally the IT systems work alright and all students will be able to contribute as they can hear what is being discussed without encountering any problems. I expect that this will not be the last time it occurs.

Looking forward, I believe it's imperative to try and attend every face to face sessions as much as i possibly can to avoid the technology problems we encountered in session 3. Technology is very unpredictable on times but if I am on site with the other students, I feel a lot more at ease than online if the majority is there in person. Sometimes the winter months will dictate this, for example I was supposed to attend the last session in person but the snow came down and I had to make a conscious decision that it wasn't advisable to travel as the roads would have been too dangerous.

But overall, I believe that these things are sent to try us and happen for a reason. Modern Technology is great as long as it's working!

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