

Number's Count

Georgia Kenny

Student ID 2315252

Date 16.01.2025



Contents page

Element 1: Essay - Why is good numeracy important? Pg 3-4

Essay reference list Pg 5

Element 2: Blog – What can schools do to encourage numeracy? Pg 6-9

Blog reference list Pg 10

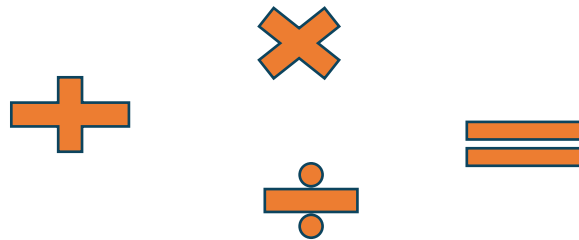
Element 3: Resource sheet- Math Link cubes Pg 11-12

Resource sheet reference list Pg 13

Element 4: Video of the resource in action Pg 14

Element 5: Evaluation of the resource (Math link cubes) Pg 15-16

Evaluation reference list Pg 17



This essay will look at why good numeracy is important. It will look at how political and social numeracy is linked and will also investigate key trends around numeracy and how it has developed over time. Albert Einstein once said, “Pure mathematics is, in its method, the poetry of sensible concepts” (Einstein, 1935). Numeracy is something that is used in everyday life and is also something that has been developed over time. Showing good numeracy skills can develop other aspects of a person’s life such as confidence and self-esteem, critical thinking, problem solving, financial literacy and how to critically analyse (Math’s academy, 2022). Numeracy can also be a connective tool between other curriculums such as literacy.

Firstly, this essay will discuss how early intervention is important for developing numeracy skills. According to National Center of Education Statistics “Early math skills are predictive of later math achievement, and math achievement is predictive of later reading achievement” (Math’s academy, 2022). By introducing numeracy in early years this can help to develop numeracy skills and confidence around it in later years and in other areas such as literacy and science (BabyFe, 2024). In early years numeracy is used as part of a daily routine and used as much as possible. This could be in the way of counting out how many pieces of apple a child may have during snack time, using songs that include numbers during song time such as five little ducks, also using different shapes and making patterns. Children will begin to understand daily different forms of numeracy that are used (Department of Education, 2022). For children that get the right introduction to numeracy this can then lead to confidence not just with numeracy but in other aspects of education and in adult life involving good money management and confidence when using numeracy in day-to-day life (Soar, 2019). Good numeracy can allow a child to develop critical thinking skills. Critical thinking allows us to evaluate and process data, analyse information, and to make sound judgments. This is important in tackling daily challenges, solving problems and making decisions based on evidence (Life Literacy Canada, 2024). Political views show that individuals who are introduced to good numerical data will be able to analyse and understand this later in life. Whereas individuals that are not exposed to this will struggle to understand and breakdown any numerical data in adult life (Baker et al, 2020).

Key trends are an important way in producing good numeracy and keeping it growing throughout generations. Some of the recent key trends in Wales are personalised assessments that are used in Reading and Numeracy. These online assessments are designed to support the development of reading and numeracy skills for children. It is used in schools as one of a variety of approaches to support a child’s progression as part of the Curriculum for Wales (2023). Yearly assessments are necessary for pupils in Years 2 to 9 in a mainstream school. These assessments are personalised to each child depending on the needs of each individual. The assessments are made up of Numeracy which is taken in two parts. Numeracy (Procedural) and Numeracy (Reasoning) (GOV.WALES, 2024). This type of assessment is known as a summative assessment and is more periodic. A summative assessment is beneficial in showing a child’s progress over a period of time. Whereas a formative assessment can be made on a daily or weekly basis monitoring a child’s progress within the classroom setting (Laurie, 2022). Formative assessment is a positive way of identifying gaps that occur within a child’s learning. Another positive point to formative assessments are that a teacher can improve rigor in the classroom focusing on areas that need to be progressed (PowerSchool, 2023). This key trend can be linked to Vygotsky and cognitive development and his concept of the Zone of Proximal Development (ZPD) as it can show where a child is after initial assessment and then by assessing that same child again and observing any progression that they have made after putting provisions in place within the areas that they are needing the most support (Kurt, 2022). The Welsh government have also put a policy in place which is there to ensure that

numeracy is maintained at a high standard in learning and ensures this follows future generations. It is designed to have been engaging for children so that they are able to understand the four purposes of the curriculum for Wales and how this can improve their future opportunities (Welsh Gov, 2023). The four purposes are ambitious, capable learners, ready to learn throughout their lives, enterprising, creative contributors, ready to play a full part in life and work ethical, informed citizens of Wales and the world healthy, confident individuals, ready to lead fulfilling lives as valued members of society (Welsh Government, 2022).

Numeracy is a vital part of education and is incorporated into other areas of the curriculum. Numeracy is linked into a majority of the curriculum as it is something that is used in everyday life such as basic sums to work out money, having to work out percentages, and being able to tell the time. All of these are important tools that will allow confidence as an adult. Incorporating math's into the wider curriculum can enable less stress and worry over numeracy for those that may find it more difficult. This can be done by combining numeracy into other activities, so it doesn't seem as though it is a direct numeracy session. An example of this could be baking and having to measure out any ingredients. This would not seem like such an intense way of applying numeracy. By doing this creative thinking can be applied into other areas of learning and applying numeracy (Twinkle, 2022).

In this essay it has been discussed how impactful good numeracy can be to a child's life leading into adult years. Giving confidence around numeracy. This confidence is then seen to move into other aspects such as thinking critically, creative thinking, financial numeracy skills and analysing information. It has also been discussed how key trends can impact good numeracy and how formative and summative assessments can impact good numeracy showing how summative assessments are a periodic assessment looking at the progression of learning over time. Whereas formative assessments are made in daily or weekly observations. Vygotsky's theory the zone of proximal development was found to be linked to this as it his theory discussed how assessing children is necessary in progression. Good numeracy is also shown to link to other areas of curriculum as literacy and numeracy are heavily linked in progression. Having good literacy can positively impact good numeracy. Overall good numeracy stems from early introduction to numeracy, allowing critical and creative thinking around numeracy following key trends and applying methods of assessment to numeracy.

Essay reference list

ABC Life Literacy Canada. (2024). *Why is numeracy important? 8 practical uses for everyday life - ABC Life Literacy Canada*. [online] Available at: <https://abclifeliteracy.ca/news/why-is-numeracy-important-8-practical-uses-for-everyday-life/>. [Accessed 2 Feb. 2025]

BabyFe (2024). *The Importance of Numeracy in Early Childhood: Long-term Benefits*. [online] BabyFe. Available at: <https://www.babyfe.com/post/the-importance-of-numeracy-in-early-childhood-long-term-benefits>. [Accessed 3 Feb. 2025]

Baker, S.G., Patel, N., Gunten, C.V., Valentine, K.D. and Scherer, L.D. (2020). Interpreting politically-charged numerical information: The influence of numeracy and problem difficulty on response accuracy. *Judgment and Decision Making*, [online] 15(2), pp.203–213. doi:<https://doi.org/10.1017/S193029750000735X>. [Accessed 23 Feb. 2025]

Department for Education (2022). *Help for early years providers : Numbers*. [online] help-for-early-years-providers.education.gov.uk. Available at: <https://help-for-early-years-providers.education.gov.uk/areas-of-learning/mathematics/numbers>. [Accessed 2 Feb. 2025]

GOV.WALES. (2024). *Patterns of attainment in reading and numeracy: September 2018 to August 2023 [HTML]* | GOV.WALES. [online] Available at: <https://www.gov.wales/patterns-attainment-reading-and-numeracy-september-2018-august-2023-html>. [Accessed 2 Feb. 2025]

Kurt, S. (2022). *Vygotsky's Theories and How to Incorporate Vygotsky's Theories in The Classroom*. [online] Education Library. Available at: <https://educationlibrary.org/vygotskys-theories-and-how-to-incorporate-vygotskys-theories-in-the-classroom/>. [Accessed 2 Feb. 2025]

Laurie, A. (2022). *Understanding the basics of formative and summative assessment*. [online] Maths – No Problem! Maths Mastery for Primary School Education. Available at: <https://mathsnoproblem.com/blog/classroom-assessment/know-the-basics-of-formative-and-summative-assessment>. [Accessed 2 Feb. 2025]

www.mathsacademy.com.au. (2022). *Importance of Numeracy Skills - Math's Academy*. [online] Available at: <https://www.mathsacademy.com.au/importance-of-numeracy-skills/>. [Accessed 2 Feb. 2025]

Powerschool (2023). *9 Benefits of Using Formative Assessment to Increase Student Progress*. [online] Powerschool.com. Available at: <https://www.powerschool.com/blog/9-benefits-of-using-formative-assessment-to-increase-student-progress/>. [Accessed 3 Feb. 2025]

Soar, S. (2019). *Early Mathematical Development A briefing paper to inform the Knowledge Makes Change Seminar Series What supports early mathematical development?* [online] Available at: <https://www.ncb.org.uk/sites/default/files/uploads/files/Maths%20Brief%20MAR19.pdf>. [Accessed 2 Feb. 2025]

Twinkl.co.uk. (2022). Available at: <https://www.twinkl.co.uk/teaching-wiki/numeracy-across-the-curriculum>. [Accessed 2 Feb. 2025]

Welsh Government (2022). *Developing a vision for curriculum design - Hwb*. [online] hwb.gov.wales. Available at: <https://hwb.gov.wales/curriculum-for-wales/designing-your-curriculum/developing-a-vision-for-curriculum-design/#curriculum-design-and-the-four-purposes>. [Accessed 21 Feb. 2025]

Welsh Government (2023). *Mathematics and numeracy plan 2023 [HTML]* | GOV.WALES. [online] www.gov.wales. Available at: <https://www.gov.wales/mathematics-and-numeracy-plan-2023-html>. [Accessed 21 Feb. 2025]

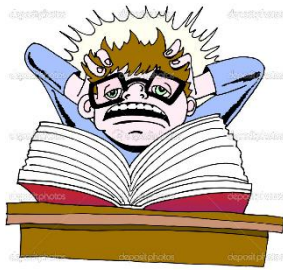
What can schools do to encourage numeracy?



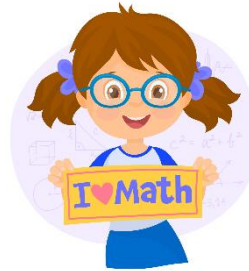
(Howley-

Rouse, 2021)

Which picture would describe you best when it came to numeracy in school?



(Clipboard, 2025)



(Xolo piks, 2024)

Personally, I was more like the first picture. I felt overwhelmed and just felt like numeracy was not for me.

I am now 32 and wonder what schools are doing now to encourage numeracy for all children. Especially for those who just don't seem to "get it".

My personal experience!

My own personal experience of numeracy in education was that it was never my strong point. I never felt like I really understood the logic and literacy of numeracy. I felt like if a teacher discussed math's and expected us to then follow those instruction, it would all become a jumble to me. I found I understood it more by using resources, for example blocks and number lines. The problem was this was not something we used a lot of at that time. It seemed to be a lot of problem-solving questions and sums which I found just simply boring.

Quick story time

A good example of those who understand math and those you just do not seem to get it would be when I needed to purchase new flooring for my house. I would simply make a guess to how many packs of flooring we would need to cover the whole room so I could avoid working out correctly exactly how much I would need. I made this judgment simply

from the size of the room. Whereas my husband can quite simply work out the exact amount we would need from the measurements of the room. He is someone who enjoyed numeracy in school and like I said just seems to “get it”.

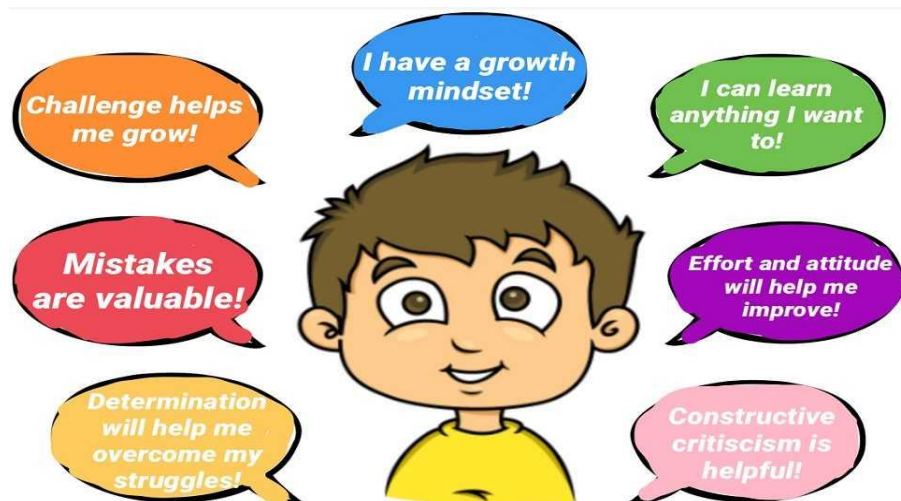
I felt envious of those that could just simply seem to understand numeracy and I still get like this when I see others working out problems with such ease. I also see it is not just if a child understands numeracy or not but the approach they get when they are in their education setting. If a child is made to feel as if they are failing at math's or graded below for example, in the school I attended we were placed into sets on our ability in math's. I was placed in one of the bottom sets which gave me the mindset from the get-go that I was bad at numeracy, and I never felt I had that encouragement to strive for achievement.

Do you think growth mindset will help children? Personally, I think it would have helped me!

❖ What is growth mindset?

So, in basic term growth mindset is the ability to realise that your ability to learn is not fixed and can progress to reach goals and achievements. A person with a growth mindset may say “I didn't get that math's equation right, but I gave it a try and understand what mistake I made, and I know what to do next time”. In education it is important to promote growth mindset to encourage confidence, A teacher could say “That was a great try, maybe give it another go and try it this way” by doing this you are acknowledging them and supporting them to give it another try to support progression (Williams, 2018).

❖ *I wonder if the teachers in education also work on a growth mindset for themselves to be able to support others to progress? This sounds like pedagogy to me!*



(Mummy and child, 2020)

Let's talk pedagogy!

(Blogs Brighton, 2019)

What is pedagogy?

Pedagogy is the science behind teaching. Teachers will use pedagogy to improve and evolve their own teaching methods. In the act of teaching there are two parties, the teacher and the taught. So, in simple terms the teacher and the pupil or pupils (Encyclopedia Britannica, 2025). Strategies of learning can stem from different approaches such as constructivism approach, which is learning from doing, or active learning. Then there is behaviorist approach which is the teacher centered

approach and is done through repetition. Knowing which theoretical approach to use in the correct situation is pedagogy (Bing, 2025). There are many educational theories so getting the right one is important. An example of a constructivist theory would be Friedrich Froebel. He believed that it was important for children to be able to learn through play (Stanley James Curtis, 2018). This is used by teachers and can be used in numeracy; an example could be using play money in a role play shop to pay for items.

What about the behaviorist approach? A theorist that used the behaviorist approach would be Burrhus Friedrich skinner. Skinner believed that the use of operant conditioning was the key to positive learning. An example of how this could be used in numeracy may be saying to a child “if you solve the next five numeracy problems, you will be rewarded with a sticker”. This is also widely used in teaching (Mcloed, 2018).

Personally, I feel like the constructivism approach would encourage me as a child with numeracy as being able to learn through play would make learning math's more beneficial way without feeling like I am taking part in numeracy.

I wonder what policies are in place to ensure numeracy is being taught in a beneficial and encouraging way?

So according to Gelliswick school policy they have a section which is named the teaching and learning policy. There are many aims within their policy, here are a few that I feel would encourage numeracy within school-



- **Planning**- Targeted planning for pupils to be able to progress.
- **Assessment for learning (AFL)**- This will allow teachers to gather information as to which areas a child may need more support or encouragement. The correct support and interventions can then be put in place to ensure the child is progressing. Continuous assessing is important to track this progression.
- **Engagement**- Using “Hooks” to draw in the attention on the child to encourage and engaged throughout learning activities.
- **Opportunities to develop literacy, numeracy and digital competence skills**
- **Positive praise and encouragement**-Using positive reinforcement. (Teaching and learning policy, 2024)

All the above are important in encouraging good numeracy in schools and maintaining that growth mindset.

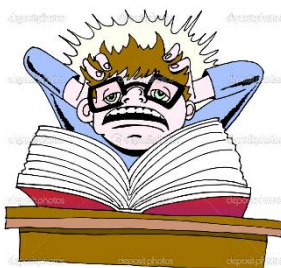
Wales also has a policy of its own to ensure that numeracy is encouraged and maintained in schools. It outlines that their aim is to achieve high standards and aspirations for all.

“This will be done by supporting the impact of poverty on educational attainment and supporting every learner. Nothing is so essential as universal access to, and acquisition of, the experiences, knowledge and skills that our young people need for employment, lifelong learning and active citizenship”

“Through its focus on the four purposes of the curriculum and progression, Curriculum for Wales presents a unique opportunity to secure that universal access for learners in Wales” (Welsh government, 2023)

After hearing all of this I feel like if I had the encouragement that schools have in place now I feel like my original choice picture would change to the second.

What about you?



(Clipboard, 2022)



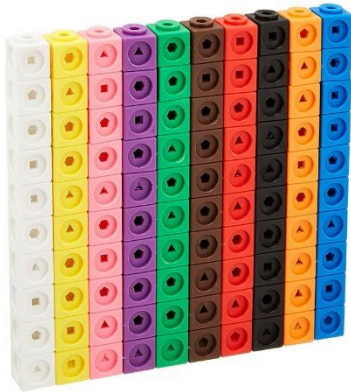
(Xolo piks, 2024)

Blog reference list

- Bing.com. (2025). *what is pedagogy* - Search Videos. [online] Available at: <https://www.bing.com/videos/riverview/relatedvideo?q=what+is+pedagogy&mid=CD606BE0F55347D7EA7FCD606BE0F55347D7EA7F&mcid=C635D6F07C7B494FB3E6FA720B041C05&FORM=VIRE> [Accessed 9 Feb. 2025].
- Blogs.brighton.ac.uk. (n.d.). *Pedagogy | My journey through PGCE*. [online] Available at: <https://blogs.brighton.ac.uk/ffionbrizeldenpgce/2019/08/15/pedagogy/>. [Accessed 9 Feb. 2025]
- Clipground. (2025). *Overwhelmed clipart* - Clipground. [online] Available at: <https://clipground.com/overwhelmed-clipart.html> [Accessed 9 Feb. 2025].
- Encyclopedia Britannica. (2025). *Pedagogy - General objectives of teaching*. [online] Available at: <https://www.britannica.com/science/pedagogy/General-objectives-of-teaching>. [Accessed 9 Feb. 2025]
- Howley-Rouse, A. (2021). *Teaching and learning mathematics at primary school*. [online] THE EDUCATION HUB. Available at: <https://theeducationhub.org.nz/teaching-and-learning-mathematics-at-primary-school/>. [Accessed 5 Feb. 2025]
- McLeod, S. (2024). *Operant conditioning: What it is, how it works, and examples*. [online] Simply Psychology. Available at: <https://www.simplypsychology.org/operant-conditioning.html>. [Accessed 9 Feb. 2025]
- Stanley James Curtis (2018). Friedrich Froebel | German educator. In: *Encyclopædia Britannica*. [online] Available at: <https://www.britannica.com/biography/Friedrich-Froebel>. [Accessed 9 Feb. 2025]
- Teaching and Learning Policy. (n.d.). Available at: <https://primarysite-prod-sorted.s3.amazonaws.com/gelliswick-vc-primary-school/UploadedDocument/4b3c7558-3957-40fc-a047-b19d2c77156d/teaching-and-learning-policy-live-nov-2024.pdf>. [Accessed 9 Feb. 2025]
- Welsh Government (2023). *Mathematics and numeracy plan 2023 [HTML]* | GOV.WALES. [online] www.gov.wales. Available at: <https://www.gov.wales/mathematics-and-numeracy-plan-2023-html>. [Accessed 9 Feb. 2025]
- Williams, E. (2018). *What Is A Growth Mindset And Why It Matters For Children And Their Parents*. [online] Third Space Learning. Available at: <https://thirdspacelearning.com/blog/what-is-growth-mindset/>. [9 Feb. 2025]
- Xolo Piks (2024). *Happy girl holding banner saying she loves math*. [online] Vecteezy. Available at: <https://www.vecteezy.com/vector-art/3546529-happy-girl-holding-banner-saying-she-loves-math> [Accessed 9 Feb. 2025].

MATH LINK CUBES

(Primary ICT, 2024)

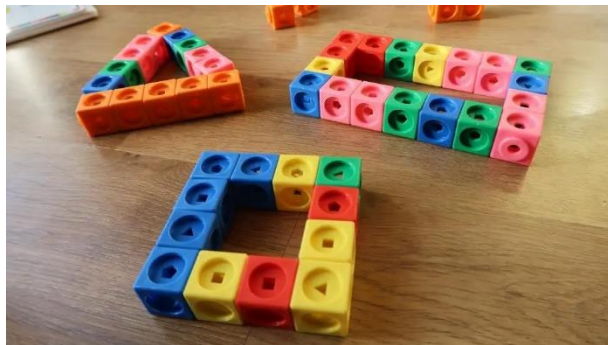


What are math link cubes? and what are they used for?

This resource is great for different activities revolved around numeracy from early years to key stage 2 and even up to GCSE level. They can be used to support a wide range of numeracy skills such as **counting, addition, subtraction, multiplying, measuring, fractions, data and forming patterns** (Mencia, 2023).

This show's how this is a very versatile resource to use and is a resource that has been used in schools for over 50 years! The size and colour of the cubes are also what makes it appealing as it is great for small hands and supports those fine motor skills and the colour's make it engaging (Findel international, 2021). It can be used with a group activity or for an individual within an intervention session.

Which individuals or group might this resource be aimed at?



Being a Teaching assistant within the education sector I use the *math link cubes* for all children, however I personally have found that I use them more with ALN children or the lower ability groups as the bright colour's and simplicity of them makes numeracy more engaging for those that may not otherwise want to engage in numeracy activity's (Learning resource, 2023).

(Eaves, 2018)

Modern day connections

Modern day connections to *math link cubes* are a popular television show called Number blocks. This television show has a strong link to the *math linking cubes* and enables children to connect to the object through number blocks especially younger child and children with ALN. (UKdadblogger, 2024)

(Editor, 2023)



MATH LINK CUBES

What theories could back up this resource?



(Currell, 2022)

This resource is good for promoting a sense of learning through play as it isn't just sitting and writing out equations and number sentences. After looking at different theorists it seems as though *Jerome Bruner* has a concept theory which could include the use of *math link cubes*. Bruner's theory talks about how children are able to learn from actively using tools within their environment to explore and learn. So, children can learn from using the

cubes as a tool to solve a math problem (Currell, 2002).

Can children use this resource to self-assess and can you monitor progress using this resource?

(Thames and Kosmos, 2024)

It is very important for children to be able to self-assess and take responsibility for their own learning and work (Dabell, 2021). Math link cubes are great for self-assessing as there is a physical answer in front of the child, they can work out an answer and check it is correct by using the cubes. This is a great way for children to self-assess their work (LearningMole, 2024). The way that teachers would be able to monitor progress would be through formative assessments that can be made when working with a child monitoring if they are progressing in their numeracy when working with this resource. Or if the resource is not working with that Patricia child.



Is this resource a good investment and is it durable?



This math's resource is not only great for the colour (*engaging*) and size (*great for fine motor skills and hand eye coordination*) it is fantastic for its durability factor which is what is wanted for children as you want to invest in a resource that will last. Math link cubes can last for years which is a great investment for the classroom (Set, 2023). Also, with the cubes versatility they can be applied to many different activity's.

(Happy, 2021)

Are math link cubes something you would introduce into your class?

Reference list for resource sheet

- Currell, J. (2022). *How to put Jerome Bruner's CPA Approach into teaching practice*. [online] Maths – No Problem! Maths Mastery for Primary School Education. Available at: <https://mathsnoproblem.com/blog/teaching-tips/jerome-bruner-theories-put-into-practice>. [Accessed 13 Feb. 2025]
- Dabell, J. (2021). *Self assessment by primary children is important for learning*. [online] Maths – No Problem! Maths Mastery for Primary School Education. Available at: <https://mathsnoproblem.com/blog/classroom-assessment/self-assessment-by-children>. [Accessed 13 Feb. 2025]
- Dyscalculia: A Visual Learning Approach | Dad Blog*. [online] Dad Blog. Available at: <https://dadblogger.co.uk/how-numberblocks-supports-children-with-dyscalculia/> [Accessed 10 Feb. 2025].
- Eaves, J. (2018). *8 Awesome Mathlink Cubes Activities*. [online] Monkey and Mouse. Available at: <https://monkeyandmouse.co.uk/8-activities-for-mathlink-cubes/> [Accessed 10 Feb. 2025].
- Editor (2023). *Blue Zoo signs Alphablocks, Numberblocks Japan deal*. [online] Advanced-television.com. Available at: <https://www.advanced-television.com/2023/10/05/blue-zoo-signs-alphablocks-numberblocks-japan-deal/> [Accessed 25 Feb. 2025].
- Findel International. (n.d.). *What are Multilink® cubes and how can they be used in the classroom?* [online] Available at: <https://www.findel-international.com/findel-international-blog/international-schools/what-are-multilink-cubes-and-how-can-they-be-used-in-the-classroom>. [Accessed 10 Feb. 2025]
- Happy, M. (2021). *MATH LINK CUBES - MommyHappy*. [online] MommyHappy. Available at: <https://mommyhappygroup.com/math-link-cubes-2/> [Accessed 13 Feb. 2025].
- LearningMole* <https://www.facebook.com/ukdadblogger> (2024). *How Numberblocks Supports Children With LearningMole*. (2024). *Self-Assessment Techniques: Strategies for Kids to Track Their Educational Growth - LearningMole*. [online] Available at: <https://learningmole.com/self-assessment-techniques-kids-understand/>. [Accessed 13 Feb. 2025]
- Learning Resources (2023). *Tried & Tested: MathLink Cubes Numberblocks Classroom Set*. [online] Learning Resources UK. Available at: <https://www.learningresources.co.uk/blog/trying-and-tested-mathlink-cubes-numberblocks-classroom-set/> [Accessed 13 Feb. 2025].
- Mencia, C. (2023). *5 Ways To Teach Math With Linking Cubes - Crystal Mencia*. [online] Crystal Mencia. Available at: https://teachingprincipal.com/5-ways-to-teach-math-with-linking-cubes/#google_vignette. [Accessed 10 Feb. 2025]
- Primary ICT. (2024). *MathLink Cubes - Set of 100 - by Learning Resources*. [online] Available at: <https://www.primaryict.co.uk/pr8479/mathlink-cubes-set-100-learning-resources-4285>. [Accessed 10 Feb. 2025]
- Set, A. (2023). *Shop the MathLink Cubes Review - Set of 100 Cubes. Discover why these learning resources are essential for math education*. [online] Home School Gear. Available at: <https://homeschoolgear.com/mathlink-cubes-review/> [Accessed 13 Feb. 2025].
- Thames & Kosmos. (2024). *Kids First Math: Linking Cubes Math Kit with Activity Cards*. [online] Available at: <https://store.thamesandkosmos.com/products/linking-cubes-math-kit-with-activity-cards>. [Accessed 13 Feb. 2025]

Video link

https://www.canva.com/design/DAGfRoGYxKs/Paa-Rt77QJe1tliU6ZGbrA/watch?utm_content=DAGfRoGYxKs&utm_campaign=designshare&utm_medium=link2&utm_source=uniquelinks&utlId=h59197772c1

Evaluation of Math link cubes

During this evaluation it will be discussed and evaluated the use of math link cubes for numeracy. The resource being discussed will be analysed and assessed to understand the effectiveness of the resource within numeracy activities in education. The resource will be critically analysed to understand if this resource is beneficial when assisting the teaching application of numeracy. Not only critically analysed but what are the main positive judgments to this resource and how has theory been applied to this resource to understand the effectiveness it has when being used to help children understand a range of numeracy skills using the math link cubes.

What are math link cubes?

Firstly, Math link cubes are a resource used to develop numeracy skills in education settings, this can be in schools or also for home education (UKdadblogger, 2024). They were first developed and began being used in the 1970's to support children with numeracy. To simplify what math link cubes are they are coloured blocks that can be linked together, teachers use them widely as a support resource to encourage numeracy skills (Findel international, 2021). This resource is linked to Jerome Bruner's cognitive development theory. Bruner's theory identifies how a child can learn through play and how making mistakes in learning can help to build problem solving skills. This can encourage a growth mindset (Currell, 2022). The reason this theory can be linked to the resource is because this is hands on resource a child can physically find the answer to an equation by using the cubes in the correct way. An example could be asking a child to share nine cubes between three friends. They can physically do this and find the correct answer, or they can work it out and then check they are correct with the cubes (Smith, 2016). This has been demonstrated in the video and was shown to be effective.

What are the disadvantages to math link cubes?

There must be some disadvantages to this resource. Now every child is different, and some things work for some children while they don't work for all. Trying to find something to work for every child can be difficult. Let's discuss the negative side to this resource and what the downside to using it may be. Firstly, it can be a distracting resource. While a child is supposed to be building up a given number of, for example five cubes, another child could just be building a tower without counting, the colour can also be distracting for the child (Family.co, 2021). An example of this can also be seen within the demonstration in the video where the child began to focus more on the colours than just simply counting them. This is something I have seen myself. Secondly, some children may become overly dependent on using this resource to work out basic numeracy which may become a problem later when the cubes are not always available for use. It is good for children to be able to harbor a wide range of techniques to work out numeracy, so they do not become dependent on one. Thirdly, some children seemed to struggle with putting the cubes together and taking them apart if they are young, have poor grip and have poor hand eye coordination so in this instant a child with any of these would not be able to or find it very difficult to use this resource (Studocu, 2023).

What are the advantages of math link cubes?

The positive elements to math link cubes are that they are great for what is known as a "math manipulative". This is when an object is used to perceive numeracy concepts by manipulating it with an object (Proudtobeprimary, 2018). The resource is linked to early years foundation stage and the National Curriculum. The cubes are versatile in that they can be used at the very start of numeracy from counting 1-

5 and making simple patterns (Learning resources, 2023). Another advantage of this resource is the size and engaging colours. The size makes it easy for small hands to grab and to enhance the child's fine motor skills. The colours make numeracy activities more engaging (Findel international, 2021). The final advantage to the use of the resource is the durability of them. The materials used to make them are strong and long lasting making them a great investment for classrooms as they will last for years if they are looked after (Nat, 2019).

Conclusion of math link cubes.

To conclude this evaluation, math links cubes have been a popular resource for delivering numeracy in education. It has been discussed how the resource is linked to Bruner's theory of cognitive development and how children can use this resource to work out mathematical problems and build their problem-solving skills by using objects to make activities more engaging. According to Sanford fit (2023) by building on problem-solving skills from a young age children will develop in other vital areas such as critical thinking, resilience, coping skills and their confidence. It has also been discussed the disadvantages to using math link cubes in numeracy. Some disadvantages discussed were how the cubes could become a distraction from an activity that has been set out for the child or group. In some cases, a child may become dependent on using the cubes to complete numeracy activities. Also, this could be limiting for some children as they could find the fine motor element of using the cubes difficult due to hand eye coordination issue, sight issues, and colour differentiation problems (Studocu, 2023). According to Beck (2023) this element could also fall into the advantages as the more a child uses this resource, they will develop these fine motor skills. Some advantages to the math link cubes are that the size and colour are engaging and small enough to grasp for younger children. This resource is also linked to Early Years Foundation Stage and National Curriculum. I personally think that the fact that it is linked to the curriculum shows it is an impactful resource. The monitoring of progression can be done through formative assessing and seeing how a child improves when using this resource. Notes can be made in a child's workbook when they have completed a piece of work making a note of progression. If a child is not progressing with this resource, it might be that it is not working for that child. Overall, it seems that this resource is very effective, durable and engaging but also has negative points. I personally think it comes down to each individual child as all children learn differently through using different tools and techniques which is known as the meshing hypothesis which shows how children learn through a variety of ways judging by their individuality (Pasher et al, 2009).

Evaluation reference list

- Beck, C. (2023). *Fine Motor Skills and Math Development*. [online] The OT Toolbox. Available at: <https://www.theottoolbox.com/fine-motor-skills-and-math-development/>. [Accessed 15 Feb. 2025]
- Dyscalculia: A Visual Learning Approach | Dad Blog*. [online] Dad Blog. Available at: <https://dadblog.co.uk/how-numberblocks-supports-children-with-dyscalculia/> [Accessed 15 Feb. 2025].
- www.famly.co. (n.d.). *We need less colour in the Early Years | Famly*. [online] Available at: <https://www.famly.co/blog/we-need-less-colour-in-the-early-years>. [Accessed 21 Feb. 2025]
- Findel International. (2021). *What are Multilink® cubes and how can they be used in the classroom?* [online] Available at: <https://www.findel-international.com/findel-international-blog/international-schools/what-are-multilink-cubes-and-how-can-they-be-used-in-the-classroom>. [Accessed 15 Feb. 2025]
- Learning Resources (2023). *Tried & Tested: MathLink Cubes Numberblocks Classroom Set*. [online] Learning Resources UK. Available at: <https://www.learningresources.co.uk/blog/tried-and-tested-mathlink-cubes-numberblocks-classroom-set/>. [Accessed 15 Feb. 2025]
- Nat (2019). *The Complete Illustrated Guide to linking cubes: MathLink cubes, Unifix Cubes, Snap Cubes and more*. [online] Naticulate. Available at: <https://www.naticulate.com/linking-cubes-complete-guide/>. [Accessed 15 Feb. 2025]
- Pashler, H., McDaniel, M., Rohrer, D. and Bjork, R. (2009). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, [online] 9(3), pp.105–119. doi:<https://doi.org/10.1111/j.1539-6053.2009.01038.x>. [Accessed 15 Feb. 2025]
- Proud to be primary*: <https://www.facebook.com/proudtobeprimary> (2018). *Math Manipulatives Everyone Should Have*. [online] Proud to be Primary. Available at: <https://proudtobeprimary.com/math-manipulatives/>. [Accessed 15 Feb. 2015]
- Sanford Fit. (2023). *Tips on Building a Problem-Solving Mindset in Kids | Sanford Fit*. [online] Available at: <https://fit.sanfordhealth.org/blog/tips-on-building-a-problem-solving-mindset-in-kids> [Accessed 15 Feb. 2025].
- Smith, M. (2016). *Jerome Bruner and the process of education | infed.org*. [online] Infed.org. Available at: <https://infed.org/mobi/jerome-bruner-and-the-process-of-education/>. [Accessed 21 Feb. 2025]
- Studocu. (2023). *[Solved] what is the challenge of using Mathlink cubes in a classroom - Elementary Mathematics Methods (C109) - Studocu*. [online] Available at: <https://www.studocu.com/en-us/messages/question/3127813/what-is-the-challenge-of-using-mathlink-cubes-in-a-classroom> [Accessed 15 Feb. 2025]

