

Module - Numbers Count - Portfolio

Module code - ECIE5002

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Element 1: Essay - Why is good numeracy important?

Essay – Why is good numeracy important?

“To not know math is a severe limitation to understanding the world’ (Randolphcollege.edu, 2025). The statement above resonates with the fact that numeracy is an important skill to have throughout all aspects of daily life (Salim, 2024).

The purpose of this essay is to explore the importance of effective numeracy skills, the effects of poor numeracy skills and how improvements can be made. According to Martin (2023) numeracy refers to the application of numerical skills through everyday life experiences, whereas mathematics refers to the skill of working out equations or problems.

Numerical competency is vital in this modern day, being able to transfer skills into real life situations should become second nature, it is vitally important that teaching begins at a young age with activities such as using money to buy items, measuring with rulers and tape measures and weighing ingredients to bake cakes (Haley, 2022).

Improvements are being made in schools to help improve numeracy skills for our learners with the introduction of the new Curriculum for Wales in September 2022 (Equal Education Partners, 2023). Welsh Government (2023) states there is a plan to build strong relationships for learners by using effective provision to support schools and settings as they develop the Curriculum for Wales, engaging practitioners to enhance their own numeracy skills to boost confidence which can be passed on to others. The Curriculum for Wales will be under review to ensure it is progressing in a positive way which benefits learners and practitioners through verbal feedback, reports and test results. Children leaving school with poor numeracy skills are facing severe consequences in their futures, with unemployment being one of many issues. It has been suggested by Full Fact (2023) that individuals leaving education with poor numeracy skills are twice as likely to be unemployed as those with more numerical knowledge.

Prime minister Rishi Sunak indicated that the United Kingdom has an anti-maths mindset, and a new approach was needed to improve the skills and knowledge of our young learners to help boost the economy and provide more opportunities and better jobs for the future (Sunak, 2023). The current statistics about the numeracy crisis in the UK suggests that 49% of working age people have a numeracy level of an 11 year old child, these poor numeracy skills are costing the UK billions of pounds a year, National Numeracy (2021) have suggested 5 priorities for the next government to help improve standards, some of these include closing the numeracy gap between the socio economic groups, and ensuring every child leaves school feeling confident with their numerical skills. Lower wages, unemployment and poor financial literacy have all been linked with poor numeracy skills, with a suggestion that there is an annual cost of £20 billion due to lack of skills in the United Kingdom (National Numeracy, 2019). According to Bynner (n.d.) there is a decline in a person’s numeracy skills if they are not used on a regular basis, suggesting there is a vicious cycle between maintaining skills and obtaining employment, so leaving education with a higher-level numeracy skill will be beneficial to solving this problem. The report made by Bynner (n.d.) found that there were more substantial effects for people with lower basic skills including social, economic and well-being issues.

There is support out there for adults who wish to improve their numeracy skills, through schemes such as the National Numeracy challenge. The National Numeracy challenge is an

online resource which can be used to check and improve your numeracy skills; however, it helps with math that would be used in everyday life e.g. managing money instead of maths skills such as algebra. The test helps to pinpoint where your strengths and weaknesses are for you to make improvements (elearning for healthcare, 2024). The National Numeracy challenge is endorsed by many celebrities and household names such as Martin Lewis and Denise Welch who think that improving numeracy is a vital skill for adults and they share their personal experiences, another ambassador for the project is Rachel Riley who stated 'There is no such thing as a maths brain. Anyone can be numerate, it's just a matter of confidence' (Nationalnumeracy, 2025). The government also introduced a new project in 2017 called the flexible learning fund, the fund costs £11.4 million and promises to support adults with training that will help boost their skills in preparation for employment (Department for Education, 2017). There are multiple aims for the fund, these include providing flexible learning for learners who may have prior commitments, it also benefits businesses to help boost their current workforce and their skills to help with productivity in the workplace (Department for education, 2017).

This essay has concluded that good numeracy is important for several reasons and can have a positive impact on many aspects of a person's life including employment, social aspects and well-being. According to Age UK (2024) there is a shame or stigma attached to having lower basic skills, which can result in lower confidence in abilities leading to individuals becoming reclusive and reluctant to participate in social experiences with others.

With the current Curriculum for Wales focusing on cross curricular learning and learning through real life experiences are children missing out on developing the basic skills such as times tables through learning styles like rote learning, where learners memorise number facts (Korbey, 2023). Rote learning can have some benefits in the progression of numeracy skills, this method can be used as a building block to learn key facts which will lead learners to think more critically when exploring more complex subjects. With rote learning being a controversial issue in schools, this generic approach may not be suitable for all learners and their styles, does this mean it should be eradicated completely? (Podareducation, n.d.).

So, in essence, good numeracy is important for learners because it is a life skill that increases confidence in many areas of learning and builds strong foundations for a brighter, more successful future (Noureen Lakhani, n.d.).

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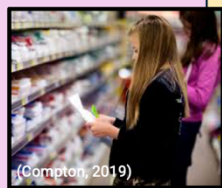
Element 2: Blog – What can schools do to encourage numeracy?

Strength in numbers...

Cross curriculum



(Archer, 2020)



(Compton, 2019)

Children being confident in their abilities with math's often plays a bigger part when accessing other areas of the curriculum as numeracy is interlinked to many different subjects (Ward-Penny, N.D.). Solely teaching Math's as an individual subject does not represent real-life (Dalton, 2019). Think of how fantastic life will be if you can figure out that its possible to have that extra packet of biscuits within your weekly shopping budget. Bonus!

Theorist John Dewey believed children got more out of engaging in activities with a hands-on approach and reflecting on what they have learnt to gain a deeper understanding of the skills they acquire (Clove, 2023).



(ITV News, 2022)

Darts has become a popular activity for children over the past couple of years due to the success of Luke Littler, a teen who shot to success in the sport. Darts is a fantastic game to encourage multiple math's skills like addition, subtraction and multiplication – and lots of fun for all (National Numeracy, 2024).

Hands on learning

Have you tried baking a cake without touching any of the utensils and ingredients needed? Pretty impossible if you ask me! Hands on numeracy is so much more than teaching math's skills. Having a hands-on approach to learning is more engaging and helps with a deeper understanding of the subject (Didax Educational Resources, 2024).

Real life context

Make learning fun

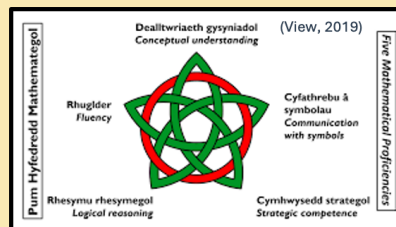
It all adds up...



(98thpercentile.com, 2019)

In today's society it is understood that we face diversity with our learners and their personal learning styles. AI can play a role in personalised learning in the classroom through apps which test learner's knowledge on numeracy, it can extend or simplify questions depending on the answers given by the child and keep track on their progress on a given subject (Google Books, 2025).

Personalised learning



Providing opportunities

The 5 concepts in the Numeracy Framework for Wales ensures all areas of numeracy development for the learners are being met. They can be used in real life contexts to help consolidate a learners understanding (hwb.gov.wales, n.d.).



(McGinty, n.d.)

A barrier for children improving their numeracy skill is confidence, our job as educators is to provide opportunities for problem solving and exploration instead of having emphasis on what they can remember (Price, 2023). Not everyone has an eidetic memory like the one and only Sheldon Cooper!

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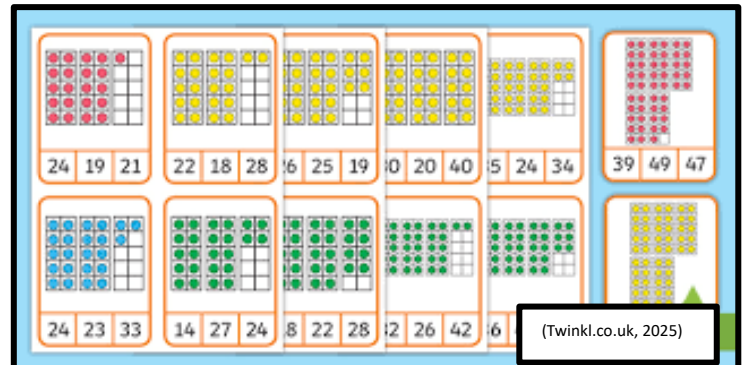
Element 3: Resource – Information Sheet for professionals about a numeracy resource of your choice which aims to support numeracy development in pupils with ALN

Information sheet – Numeracy resource

The Ten Frame

What is it?

A ten frame is a highly recommended and versatile classroom resource, consisting of a grid with 2 rows and 5 columns (Marlow, 2023). A ten frame can help with the concept and value of a number, place value, subtraction, addition and patterns within numbers (Math, Kids and Chaos, 2020).



Who is it aimed at?

A ten frame is such a versatile resource that it can be used in a variety of ways across different year groups from early years up to year 6 (TTS, 2020).

In early years it can be used for a simple counting activity up to five or ten however in older year groups it can be beneficial for counting in multiples of ten to accumulate a larger amount. The ten frame is valuable for gauging what level a child is at and what the next steps will be (Teaching Works, 2015).



Why do we use it?

Using a ten frame helps learners to visualise numbers and their amounts, using a resource like this will help children to build a mental image of number and begin to understand the concept of ten, which is a staple when learning concepts like place value (SA Numeracy Chair project, n.d.).

Getting started

The ten frame is a fantastic way for children to visualise numbers and quantities, however, initially will need some input from the adult to ensure it is used correctly and effectively (Joe, 2020).

Much like Vygotsky suggests in his theory of learning, cognition and language of a child can be vastly improved when working alongside a more knowledgeable person e.g. a teacher or parent. Entering the Zone of proximal development, a child can improve their skills through modelling from a more knowledgeable other who will guide them through the process to build their confidence in the subject (Read, 2006).

Hands on learning

Froebel believed play was vital for a child's development and they develop an understanding of the world around them through direct experiences outdoors, stating the adults were merely an observer in a child's learning (Early Education, 2021). Part of this resource would fit in with Froebel's hands on approach to learning, with a ten frame being so versatile it can be used outdoors incorporating the world around us e.g. shell, sticks and stones (Williams, 2025) however Froebel's approach does conflict with the idea that it needs scaffolding from an adult for the resource to be understood and used correctly.



The history

The Ten frame was developed by John A. Van de Walle and Janette Bobis in 1988, to help children gain confidence recognising numbers within the context of ten. It has been suggested that children can visualise and recognise numbers long before understanding the concept of tens and units and the value of a particular number (Starfall, 2016).

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Element 4: Video of the resource in action

https://youtu.be/C_2ENdof9Cs - video of a ten frame being used by a child in reception class.

Element 5: Evaluation of the resource

The following evaluation is looking at a popular numeracy resource used in schools today. I am going to be explaining the uses of this resource, what the benefits and disadvantages are, and give feedback on my personal experiences of using the resource.

The resource I am going to evaluate today is a ten frame. The ten frame is a highly renowned numeracy resource used in primary schools, mainly used in early years to help with the understanding of numbers to 10, however can be used with older children with skills such as counting in tens (Marlow, 2023). Today we still use an ancient Indian number system which revolves around the number 10, using a ten frame helps us to visualise and use numbers in several different ways such as counting, subtracting and number bonds (Joe, 2020). The ten frame is a versatile resource that can be used inside and outside the classroom, it can also be created in a variety of ways such as using egg boxes, chalks, sticks or stones (Creative STAR Learning, 2023).

Disappointing PISA results in 2009 led the Welsh Government to overhaul the curriculum as we knew it, they developed a new strategy called the Literacy and Numeracy Framework. The Numeracy Framework for Wales covers multiple strands for mathematical knowledge and has many progression steps to support learners through their numeracy journey in education (Educational Development Trust, 2018). When looking at the benefits of the ten frames in relation to the Numeracy Framework (Welsh Government, 2020), there are elements where this resource could support a learner develop their numeracy skills e.g. a strand within the Numeracy Framework is 'understanding the number system helps us to represent and compare relationships between numbers and quantities'. Within the strand there are elements that talk about number systems and relationships with numbers, this involves skills such as counting on and back, comparing numbers and estimating, these steps would benefit from a resource like a ten frame where the learner would be able to visualise the number and solve equations with a hands-on approach. When going through the progression step for the numeracy framework it is inevitable that the skills required will be more difficult, with this in mind a ten frame may have limitations in helping a learner higher up on the progression scale and other resources would take precedence in supporting these learners, however this does not take away from the earlier work a ten frame would have helped with during these learners early stages in to numeracy, helping to solidify understanding of basic concepts (Inspired to Play, 2023).

According to Welsh Government (2023) the Curriculum for Wales is based around a child centred approach which encourages the learners to access activities with a level of independence and should be given the appropriate level of challenge to suit them. The ten frame activity links in well with the Curriculum for Wales and its ethos, it is a hands-on activity using real life authentic experiences, making the

learning fun and engaging (Melissa, 2023), this links in with Piaget's theory of education where he believed children learnt more from meaningful hands on experiences rather than the delivery of information, he suggested learners needed to experience concepts to begin understanding them (Hargraves, 2021).

The hands-on approach plays a vital role in the success of the ten frames, however for this to work we need to support the learners to use it correctly. Scaffolding is something Bruner spoke about in his theory, *The Scaffolding of Learning* (1976), Bruner suggested that children needed active support initially when learning a new concept to fully understand the skills needed to be successful, after some time of having support, these learners could then tackle these skills independently (Wheeler, 2014).

Gauging on my own experience of the ten frames, I can say that within a structured task with an adult present they can be beneficial to a child and their numerical development as they help with visualisation of number and structure (My Teaching Cupboard, 2023). Within modern day classrooms there is an emphasis on children taking control of their own learning, with classrooms being set up for learners to access challenges and tasks linked to a specific topic, these areas of the classroom are meant to engage learners, and inspire them to solve problems, take risks and be independent (Estyn, 2024). In theory this kind of learning space seems ideal for children to enhance their learning, however in reality the learners can often get distracted and have their own agenda on what they want to do in their learning zone, meaning a resource like the ten frame may get overlooked by something a little more exciting and inviting, meaning in order for the resource to be used to its full potential there needs to be a mixture of independent play and adult led time, with the importance of asking the right questions to support the resource being used (Pentagon Play, 2022).

Overall, the ten frame is a fantastic resource for helping introduce number and start helping learners understand the basic concepts they need to progress in their numeracy journey through school, however as previously discussed, being such a simple resource, it can easily be overlooked by learners who are working independently and are looking for some excitement in their learning tasks, again being such a simple resource it is often overlooked by older learners who are working on more complex topics in numeracy where a simple ten frame would not be needed. What we need to remember is that somewhere along the line, we all needed a ten frame to help us on our way when starting our numeracy adventure!

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