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## **Why is Good Numeracy Important?**

### **Introduction**

Numeracy is widely recognised as a fundamental subject required for progress in society. Although it is often associated with just mathematical ability. The subject of numeracy extends beyond standard knowledge and more on the application of numerical information within real-life contexts. IT is a multifaced concept (Díez-Palomar et al., 2023). In a world where technology is changing rapidly, individuals are required to frequently engage with numerical information to make informed decisions digitally. It is a fundamental element of life.

Consequently, numeracy has become a key focus point within educational policy.

This essay will discuss why good numeracy is important by exploring its role regarding individual behaviours, social life, politics and economy. Before expanding on the idea that numeracy is not solely an educational subject but a life tool that is used for enhancing life opportunities.

### **Understanding Numeracy**

Understanding the importance of numeracy requires a clear definition. Numeracy is the ability to access, use, interpret and communicate mathematical information in order to manage the demands of everyday life (OECD, 2019). This definition emphasises the importance of using functional mathematics instead of practical knowledge. Numeracy is a complex subject that is a key part of problem-solving and reasoning. Knowing how things work and how to apply them with enough knowledge, understanding and confidence to apply in everyday circumstances (Brooks, 2015).

Similarly, the UK charity National Numeracy highlights confidence and attitudes towards mathematics as integral components of numeracy competence (National Numeracy, 2022). This definition highlights how essential numeracy is and argues that numerical understanding influences engagement and performance in many tasks.

### **Personal Benefits of Numeracy**

Having a competent understanding of numeracy supports independent living and informed decision-making. You are able to make rational and logical decisions based on numerical understanding. This can be financially, socially or professionally. Research by Parsons and Bynner (2005) demonstrates that adults with higher numeracy levels show

improved financial capability and are less likely to incur debt.

Employment outcomes also demonstrate the significance of numeracy. Modern workplaces increasingly demand intense data interpretation and problem-solving abilities. Evidence from skills surveys suggests a strong correlation between individuals with low numeracy skills and high unemployment rates or reduced earnings (OECD, 2016).

Additionally, numeracy understanding affects health understanding. From medication dosages and evaluating nutritional information, all require some level of numerical understanding in order to make informed decisions. Peters et al. (2006) argue that limited numeracy can impede individuals' ability to make informed health decisions, potentially affecting treatment courses and risk perception. As a result, this can affect a person's physical well-being and quality of life. It is important that an individual has a competent understanding of how to treat any health concerns personally. Failure to do so could be catastrophic in some cases. For Example, over/under dosing medication can have adverse effects that could possibly be life-changing.

### **Social Importance of Numeracy**

Also, numeracy plays a significant role in society. In democratic societies, people are frequently exposed to statistical information that effect public spending, show health trend and economic stance. The ability to interpret global current events in a critical way is essential politically and socially. Individuals with low numeracy skills can struggle to assess current affairs or recognise misleading articles/sources that are available to them. Making them a target of misinformation.

Numeracy is also closely linked to social inclusion. National and international research consistently demonstrates that low numeracy disproportionately affects individuals from disadvantaged socioeconomic backgrounds (National Numeracy, 2022). This pattern suggests that numeracy gaps can still reinforce already preexisting inequalities and therefore limit access to fair employment, education and financial stability.

### **Political and Economic Importance of Numeracy**

The importance of numeracy is reflected in policy priorities at local and national elections. In the UK, concerns regarding adult numeracy deficits have prompted the government to roll out nationwide initiatives. One example is the Multiply programme

introduced by the Department for Education (DfE, 2022). The aim of the program is to help individuals who do not hold maths qualifications. Designed to improve the functional numeracy skills of adults across the UK (GOV.UK, 2025). The government has invested public money in this programme, highlighting that it is an issue that people must take seriously. The idea is that through enhancing numeracy skills, it will subsequently enhance employability and as a result, encourage economic growth. A critical understanding of numeracy, therefore, requires consideration of individual capabilities and broader social determinants. The program aims to increase the number of people who progress into sustained employment, improve career prospects, and reduce skill gaps reported by employers( GOV.UK, 2025).

The figures below help highlight the need for adult numeracy initiatives in the UK.

- Over 11 million people have less than £100 in savings for emergencies.
- 9 million people borrow money to pay for basic necessities like food and bills
- 22 million people admit to not having enough knowledge to plan for their retirement
- 5.3 million children in the UK do not receive a proper financial education.

(Salim, 2024)

## **Conclusion**

In conclusion, good numeracy is important because it underpins effective functioning socially, personally and economically. Numeracy supports informed financial management, increased employment prospects, health understanding and informed decision-making. Strong foundations must be implemented in early learning. If children have a positive experience learning and developing the skill as children, it will allow them to excel and make informed decisions in later life. However, it is vital to remember that numeracy level is highly correlated with societal opportunities.

Ultimately, numeracy is a life skill that is essential for all, regardless of personal circumstances.

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## Essay - Numeracy in School

Numeracy is a major life skill that enables individuals to interpret everyday life and use mathematical information to conceptualise daily tasks. Understanding numeracy gives individuals the ability to understand and use maths in daily life. Numeracy doesn't necessarily include complex skills, like algebra; it means being confident enough to use basic maths in real-life situations. (National Numeracy, 2019). Examples include budgeting and time management. For most individuals, schools are an environment in which they are exposed to numeracy first. The foundations of numeracy are established in school and developed at basic levels before advancing in later life. It is argued that mathematics is the most powerful social means (Keitel, 2006).



Schools are therefore not merely a mathematical institution but a key institution shaping attitudes, confidence and understanding in numeracy.

This essay explores the role of schools in developing numeracy skills, examining pedagogical approaches, policy frameworks and the wider educational

responsibilities associated with numeracy. It will also highlight how schools function as both learning environments and social hubs that influence learners' mathematical identities and opportunities early in life.

### What is Numeracy in Schools?

Numeracy in school settings extends beyond mathematics as a direct subject. According to the Organisation for Economic Co-operation and Development (2016), numeracy involves the ability to interpret and communicate mathematical information to meet real-life demands. This definition highly suggests that schools must focus on the wider teaching opportunities to continuously support wider understanding rather than the standalone subject in its basic form.

In the UK, some mathematics organisations emphasise numeracy confidence and positive mathematical mindsets as essential outcomes of schooling (National Numeracy, 2022). Thus, schools are responsible for enhancing skill development and learner dispositions. All while simultaneously recognising that anxiety and some negative experiences may negatively impact pupil engagement with mathematics.

The delivery of mathematics has changed over the years. The Cockcroft report (1982) identifies a change in the teaching profession and states a need to strive to give pupils more success and less failure (Cornelus, 1985). The government established an inquiry to consider teaching mathematics in schools in England and Wales. It is also worth remembering that changes in mathematics are linked to politics, economics, and culture (Hammersley et al, 2015).

### **Pedagogical Approaches to Numeracy Development**

Pedagogy plays a central role in shaping how numeracy is learned and experienced within schools. Traditional mathematics teaching often emphasised teacher-led demonstration and repetitive practice. While such approaches may support basic understanding, some argue that they can limit learner engagement.



Contemporary pedagogical frameworks increasingly advocate for active, inquiry-based learning. Boaler (2016) highlights the value of problem-solving, collaboration and multiple solution pathways in promoting deeper mathematical understanding. Learners are encouraged to justify and explore mathematical ideas, working on their transferable numeracy skills to help them in the future.

Visual tools are often used in pedagogical approaches. Some of the main resources used are number blocks and counters. These resources allow learners to conceptualise numeracy, particularly in early education.

Additionally, in recent years, digital technologies have expanded opportunities for interactive numeracy learning through simulations and game-like activities.

However, pedagogy is not solely about instructional methods. Classroom culture significantly influences numeracy development. Environments that normalise mistakes as learning opportunities and encourage discussion can reduce mathematics anxiety and promote resilience. This leads to another reflective question: **How can teachers create classrooms where learners feel safe to explore the mathematics subject in detail?**

### **Numeracy Outside of the Classroom**

An extension of pedagogic numeracy is the recognition that numeracy should not be confined to mathematics lessons alone. A cross-curricular teaching approach combines numeracy within other subjects, enabling learners to apply mathematical understanding across contexts.

For example, interpreting graphs in science experiments or analysing timelines in history. Such integration reflects sociocultural perspectives on learning, which emphasise knowledge construction through authentic activity and context (Street, 2014).

Although implementation may be challenging, including teacher confidence. Schools ensure staff are supported on their professional development journey to integrate subjects.

### **Policy Influences on School Numeracy**

School numeracy provision is shaped significantly by policy frameworks that define curriculum expectations, assessment practices and accountability measures. In Wales, the Curriculum for Wales emphasises numeracy as a cross-curricular responsibility through the Mathematics and Numeracy Area of Learning and Experience, reflecting a holistic perspective on skill development.



The Government indicated that the national curriculum would leave room for schools and teachers to decide how to teach and deliver lessons. The national curriculum

documents are specific principles of pedagogy using group work, collaborative work, whole class interactive teaching, active learning and independent work.

The National Curriculum of Wales framework for Mathematics introduced five proficiencies (Prediger et al 2022).

- Conceptual understanding

Develop a deep understanding and flexible approach to mathematics.

- Communication using symbols

Identify mathematical concepts through symbols, diagrams, and graphs.

- Fluency

Develop accuracy in mathematical procedures and recall facts.

- Logical Reasoning

Explain and investigate mathematical ideas.

This approach was developed by Welsh practitioners to consider how skilful pedagogy is in the classroom and look at experiences and how to adapt to develop knowledge and skills, can equip learners to be confident and apply skills to a range of mathematical contexts (Welsh Gov, 2023).

Similarly, UK initiatives such as the Multiply programme illustrate governmental recognition of numeracy as a national priority (DfE, 2022). Although primarily targeting adults, such initiatives highlight broader policy concerns regarding numeracy attainment and workforce readiness.

There is also a National Numeracy day every year to inspire children to develop the subject more through presenting challenges.



(Nationalnumeracy.org.uk, 2026)

## Teacher Influence in the Classroom

Teachers represent the most influential factor in classroom numeracy development. Teachers must have strong subject knowledge and child understanding in order to effectively and efficiently teach numeracy. However, research indicates that some educators experience mathematics anxiety or limited confidence in teaching numeracy,

particularly outside mathematics specialism areas (National Numeracy, 2022).

Consistent professional development opportunities are essential to combat this issue. Collaborative planning from the teacher and the teaching bodies, paired with practice, can enhance teacher confidence and performance outcomes. Additionally, through reflective practice, it would enable the teachers to evaluate the impact of their teaching.

It is important to remember that teachers' beliefs about mathematics influence classroom experiences. Teachers who project positivity around the subject are more likely to encourage young learners to engage willingly. Whereas unenthusiastic teachers will negatively impact the class mathematics as fixed and procedural may inadvertently limit learner engagement.

### **Inclusion and Numeracy**

Schools also play a crucial role in addressing disparities in numeracy levels. Socioeconomic disadvantage and special educational needs may negatively/positively influence children's numeracy experience. Schools must create intervention programmes that can support diverse learner needs.

Since the pandemic, children's key stage 2 (end of primary school) maths attainment has fallen by 10% (Anders et al., 2022) This highlights the need for schools to implement plans to increase this number and improve performance.

### **Conclusion:**

Schools play a key role in developing numeracy skills and shaping learners' knowledge and confidence towards mathematics. Through pedagogical innovation and a supportive classroom culture, schools can create numeracy learning experiences to support children and carry them on. Policy frameworks provide direction and accountability, yet must be balanced and adapted to each unique environment.

In conclusion, the role of schools extends beyond teaching calculation. Its more about nurturing individuals to reach their potential. As educational contexts continue to evolve, a key challenge remains educations must adapt proactively for students to reach full potential.

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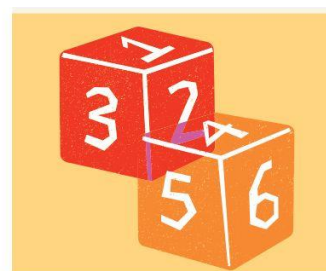
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## Element 3 –

### Resource - Information Sheet



## DEVELOPING NUMERICAL UNDERSTANDING WITH NUMICON

### Q WHAT IS NUMICON?

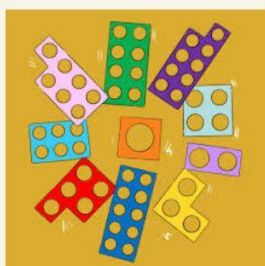
Numicon was developed by UK researchers and educators, specifically Ruth Atkinson, Romey Tacon and Dr. Tony Wing (Crawley, 2016). Numicon is designed as a multi-sensory visual, and tactile aid to help children in the classroom environment (Cardillo, 2016). Specifically those who have ALN or struggle with abstract concepts



### BENEFITS OF USING NUMICON FOR ALN CHILDREN:

It strengthens understanding of number relationships, improves skills, and supports calculation through hands-on exploration, making maths more accessible for learners with SEN, dyslexia, or dyscalculia. (Owl, 2020)

Children need symmetry and asymmetry or even odd numbers; all these helps within understanding patterns and geometric ideas (Ellia, Gagatsis, 2003).



### WHAT IS THE PURPOSE?

Children, as they inevitably handle the pieces, turn them around. Turn them over, join them, and move from place to place. Transporting Schema is a normal development stage of schematic play where children explore using cause an effect (Thomas, Bolton, 2025). These skills are important for developing a need to recognise shape and space curriculum. Ideas.

### KEY SKILLS NUMICON CAN TEACH:

Some core skills that Numicon can teach ALN children in the early years include:

- Counting
- Basic operations
- Shape recognition

(EYR, 2021)



## ACTIVITY



Introductory activity of covering the baseboard with numicon shapes is the first step for exploring shape properties. The aim of this activity is to introduce the symbol + talk about the symbol and where they might see this symbol around school or outside school. This links to the numeracy framework of communicating with symbols (Vincent et al., 2026).

# 1

### STEP 1

Show the children Numicon shapes and the word add and equals on the board. to reinforce basic understanding of symbols and their meanings.

Explain that it takes a long time to write addition and we should use a special symbol.

Introduce the symbol for addition



# 2

### STEP 2

Using Numicon numbers go through some simple addition tasks together before allowing children to practice on their own personal whiteboards



## EXTENTION ACTIVITY

Ask the children to demonstrate the symbols using their hands to help them memorise each symbol.

# 3

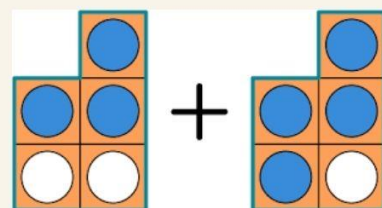
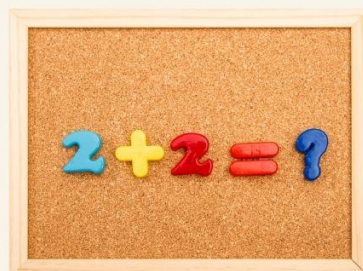
It is important to reinforce this activity frequently in class or at home

Parents should be informed of activities that their child is working on to support them



## REMEMBER

ALN children are all different it is important to adapt your approach accordingly



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## Element 4 – Video

Embed Link: [Clair Evans Element 4 Video Resource](#)

## Element 5 –

### Evaluation of The Resource

Numicon is a multi-sensory tool used to develop mathematics and support teaching approaches to help children with their development of confidence. The 1990's developed this tool and originated from a school-based research project carried out by Ruth Atkinson, Romey Tacon and Dr Tony Wing. They believed that children have difficulties understanding abstract ideas without pictures to help them. The Numicon was developed and recognised for its distinctive shape and each colour represents a number. These shapes are tactile with holes, which make them tangible and child-friendly. The nature of Numicon is that children can learn by seeing, feeling and understanding mathematical concepts through play. There are games that make this resource fun, including sensory bags (Lander, 2006) or pictures on baseboards, which the children enjoy without noticing the learning concept.

The core Numicon depends on the pedagogical principle that children learn through abstract concepts (Hedegard, 2020). Furthermore, these resource shapes can connect to form different numbers to allow children to make number bonds or double digits. This aligns with constructivist theories of learning. Those of Jean Piaget (Bates, 2023) who believed that children learn through active engagement with concrete materials before they progress to formal abstractions (Atkinson et al, 2008).

Furthermore, Numicon has been welcomed into inclusive education. Learners with special needs find memory difficult, so this provides a visual structure. The tactile dimensions: place pegs into holes, aligning shapes and overlaying patterns. Key benefits for special needs of students, especially those with conditions such as Down syndrome, Autism and other developmental delays (Nye et al, 2005). These learners, who are often strong visual learners, show themselves to be a positive resource for mathematics.

However, despite the strength and positive outcomes when using Numicon, this also raises concerns (Sayer, 2010). Students could be at risk of reliance on concrete material, which could become limiting if students struggle with physical to abstract symbols. Numicon could also be a negative due to representing numbers beyond two digits, e.g. Hundreds and thousands.

Numbers can also be expressed and represented through many ways, including tally marks, number lines, base ten blocks, or digital models (Carruthers et al, 2009). Numicon only shows one patterned block with holes. This is a strength in one aspect, but it may also limit a varied conceptual flexibility. Giving students only one visual may later show challenges in understanding an unfamiliar context.

Numicon can also be expensive for a school to fund. The initial setup of the Numicon sets and teacher training is set to impact the school's financial strains, which could hinder the full potential of the resource. The materials themselves are also not transformative; their impact emerges through pedagogical skills (Hassi and laursen,2015).

Well-being in schools is paramount, as 1 in 10 students has math anxiety, and this resource could also be a tool to help with mathematics through a hands-on approach, which builds confidence and an enjoyment of learning(Hill et al, 2020). Having a Numicon shape and being able to manipulate something physical can regulate the child and stop the negative statistics.

The critical evaluation of the lesson on video, which is in conjunction with the Numicon resource. This video introduced the sign add + and equals=. The video provides insight into delivery, classroom interaction, and real-life pupil responses. There is a clear learning objective for the student to recognise and understand the symbols. This will be identified when the child can write and read simple equations (e.g.  $2+3=5$ ). This lesson shows a clear objective and is measurable and appropriate. There are lots of visuals to help the child understand, as a few children are diagnosed with Autism and need the extra support to show knowledge and understanding of the concept. Questions were asked about understanding, e.g., “What does the + mean?” “What does the = tell us?” Small Numicon numbers were used to keep the lesson simple and to develop confidence before progression. The children had access to whiteboards and Numicon and independently wrote the sentence, which helps to make the information concrete before the next step is introduced. The lesson showed a good understanding of symbols and was an effective lesson. Maybe on reflection, to improve further I could have deepened my reasoning and ensured consistent mathematical vocabulary.

In conclusion, I believe Numicon has a place in the foundation phase and helps to promote inclusion and confidence in mathematics. This resource has proven positive and negative issues, especially if the child has any special needs. There are children who would and have benefited from this resource and maybe other children who would find this a distraction. At the same time, critically, one system cannot compress the full richness of mathematics. Numicon is a scaffolding tool to promote development in education. The difference depends on whether you are able to use mathematics not merely as shapes that fit, but ideas that grow beyond.

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