

Numbers count

ECIE5002

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Why is good numeracy important?

In the following essay I will be discussing 'Why is good numeracy important'. It will be looking into the political and social opinions and evidence and how they link to the earlier question. It is essential for numeracy/mathematics to be introduced and embedded into early-years learning. Mathematics and numeracy help learners to prepare for employment and studies further on in life. Regular participation from schools and parents/carers is crucial to any learning. By maths being a more challenging and demanding subject, it is important to extensively use mathematics for the little everyday things such as money, counting, measuring, thinking and more.

BBC News (2025) reports that record numbers GCSE results were based on resits and asks that Record numbers of GCSE results were resits and are asking 'are we in a resit crisis?'. According to the article, in England in 2025 there was only a 17.1% achieving a grade 4 or higher pass. In England and Wales pupils must resit their GCSE maths if they fail to get the pass percentage, they will need to do this whilst completing their A-levels, college courses, or apprenticeships. The article suggests (Ms Duffy) that the GCSE Maths and English curricular are expecting too much from pupils. One of the pupils James Bonning from Birmingham, who achieved a Grade 4 PASS in his exam told the BBC that it was his third attempt. The article also states 'Educationalists are sounding the alarm about this'.

When relating and thinking about numeracy, it is questionable as to whether numeracy and mathematics exams are becoming more over-complicated or how it could be delivered more easily from early years onwards. There is always room for improvement in any subject, but it is up to professionals to change the style of learning it is taught in.

Focusing on early learning and primary school numeracy and why numbers and good numeracy is important, (DOE, 01 September 2025) summarises numbers need to be real and meaningful to young children and to deliver the provision in context (DOE, 01 September 2025). Good numeracy is important to give early learners real life experiences with mathematics and numbers. Mostly, in early years learning, education is delivered through play. It encourages and expands the interest in learning. Professionals need to help learners to explore and experiment the subject of good numeracy. Developing a positive attitude towards maths/numeracy will encourage interest which furthers to faster learning and number development. By teaching practitioners looking for everyday meaningful maths opportunities, like counting apples for their friends, how many wellies they each need, how many chairs need to be out in class, how many oz of flour do they need to make cakes... this is all positive and suitable number skills and will result in learner interest.

The UK's socially acceptable attitude towards mathematics and numeracy has dramatically changed. It comes down to culture, schooling, and mindset. It is about how people are taught and think scorecards, not their serial ability. Today, the uses of Generative AI and computers, iPads and all electronic devices allow you are quickly find all answers you need to look for including mathematics and numeracy problems. 90% of graduate jobs require high level digital skills which are built from numeracy and maths (Race Online 2012). It is important for early years mathematics to begin with simple but essential learning. The importance of good numeracy begins with simple maths and numeracy for early years with shapes, adding objects together to give a total, telling the time, counting how many friends are in class. Simple but useful tools. Good numeracy is used for all learners in everyday life and becomes transferable life skills.

UK students have been found to experience an elevated level of 'Maths anxiety' among other researched countries starting from an early age and peaking at 14-15 years old. Parents often pass on their anxieties about mathematics and numeracy which then normalises a negative impact of the thought of the subject. Even though maths and numeracy is usually defined as boring or difficult it is a necessity to all areas of learning.

Good numeracy is important because recent PISA 2022 results showed a significant decline in Maths, reading, and science showing outcomes in Wales compared to previous cycles. Addressing mathematic and numeracy gaps in early years is crucial. The curriculum or Wales new framework for maths aims to improve standards by focusing on higher quality teaching, better evaluation and engaging approaches to pedagogy.

"Good numeracy is the best protection against unemployment, low wages and poor health" – (Andreas Schleicher)

There is always a growing need for good numeracy from early years to future adult life, our need for better numeracy gradually increases with age. This can typically result when we think about important and independent lifeskills for us and our families such as car finances, utility bills, renting, mortgaging, interest rates etc. Effects of poor numeracy can result in poor health problems such as diabetes – meaning number readings for sugar levels. Children with social, intrinsic and behavioural problems are more likely to be affected by poor numeracy skills. As learning practitioners and teaching staff, positive attitudes towards numeracy are essential to embed at early-stage learning.

Good numeracy is important because it supports calm and positive learning through pupil centred teaching approaches. Having good numeracy is also important because it ensures that learners with ALN can access maths at the appropriate levels, including through engaging approaches such as shortstop learning and Forest schools. Mainstream learners can also have adapted learning programs which helps them develop good numeracy skills. For example, outbuilding change the learning environment, include up to date trends and use them in the lesson plans but maths directed.

In conclusion, good numeracy is important as a foundation of learning to produce a background for the learner's future. Good numeracy aids in life skills such as bills, mortgages, shopping, health issues. Having good numeracy skills can also be passed on to other learners or peers from early years to adult life. Numeracy is in-fact an essential tool.

References – Element 1

Essay

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What can schools do to encourage numeracy

Let's talk about numeracy and how schools can help nurture it. For many people, numeracy can be a touchy subject even the words 'numeracy' or 'mathematics' are enough to spark anxiety. I will admit, maths has always felt particularly challenging for me, and it is something I have often approached with a bit of hesitation. But strong numeracy skills and, just as importantly, positive attitudes towards numeracy do not appear overnight. They begin in the early years, where confidence, curiosity, and encouragement lay the foundations for lifelong learning. If schools want learners to actually like numeracy, they need to stop treating maths like cringe and start treating it like a desert. Turn maths into games, that is what kids like these days right? Or would you suggest differently?

When you think about it, schools could do a lot to improve numeracy, most of it is not about harder worksheets or exams, it is building a foundation from early years, agree?

- Build a foundation in early years
- Make numeracy a part of everyday life
- Reduce maths anxiety
- Personalise where possible
- Engage families and communities if needed



The big secret is that children don't actually hate numbers. They just hate feeling bored, stressed and confused but I can relate to that, even as a teaching practitioner myself, I feel the same. I would suggest Norris an engaging effort into maths and numeracy, like for Istanbul as I suggested – GAMES and learning though play. Come on lets just make it fun, the boring worksheets are going to drive learners away no engage them. Learning through play is KEY!

As teaching-practitioners, you could use collaboration instead of isolation. Fun collaboration ideas could begin with –

- Team or class maths challenges
- House points/Dojo points
- Celebration and provide a certificate for "Maths achievement of the month"

Connect maths to real maths situations too, such as budgeting lunch money for the week, TikTok analysis, maths video games such as 'Top Marks'. You will often probably get the 'When a I ever going to use maths or numeracy in a real-life situation' from your learners, I can recall saying it too... but real maths situations will help you give the answers. I would suggest starting with maths in the house, your own environment. Like how many toy cars are in the box?, Get me 4 chicken nuggets out of the freezer for your dinner. It's so simple to inject maths into all situations. We need to make maths playful, useful and social

and then numeracy will stop being a battle and a skill learners will be proud of. Correct? Successful foundations get built, attitude becomes positive and grades are produced.

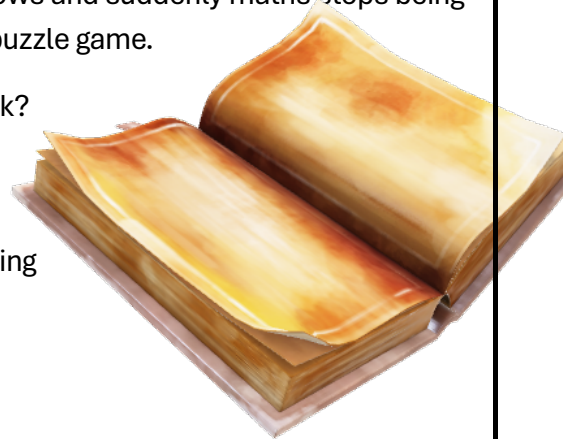
Piaget(1936) believed students don't 100% understand maths and numeracy by listening to explanations, they understand by DOING and experiencing. For numeracy in schools' activities should have hands on materials just like blocks, shapes and measuring tools. Provide real life problem solving instead of memorising unnecessary things and letting learners discover themselves, but with partial guidance. In Piaget's world... maths is something you experience, not something done to you.

“When students believe they can learn mathematics that and that mistakes are valuable, their achievement grows.” (Boaler,2016)

I recon schools can do a lot to boost numeracy simply by making mistakes which will feel *slightly* less like a disaster and more like part of the learning adventure? To be honest, at the moment, many learners treat getting a maths question wrong like they've just pressed a **BIG RED BUTTON** – but imagine a classroom right, where mistakes are celebrated like a plot twist? Instead of silence when an answer is wrong, the teacher says for example “ohhhh, interesting! Let's investigate how you came up with this answer and work together?”. When pupils see that even teachers make mistakes, that brains and ideas grow when things get tricky, fear starts to *melt away*. If maths lessons feel safe enough for pupils to take risks, ask 'silly' questions and laugh at their own wrong times or mistakes-confidence grows and suddenly maths stops being the collab of the school timetable and becomes more like a challenging puzzle game.

What could you do as a teacher you ask?

- Model making mistakes as a teacher
- Explain that experts also check over teachers work too
- Show drafts and corrections so like before and after problem solving
- Allow thinking time
- Show and produce multiple methods
- Encourage **discussion** and **reasoning**
- Praise effort and thinking – not just the correct answer.



Following on and looking into Piaget (1952) theories and what schools can do to encourage numeracy – Piaget tells us to provide hands on learning – like come on, all children enjoy playing with toys right? Use stuff like blocks, cars, build towers and all. Make it FUN. Piaget tells us that ‘logical thinking develops gradually, and children must be developmentally easy before grasping abstract mathematical ideas. Hmm, I mean I would agree... but asking teaching practitioners or even non-teaching staff... what do you think? Piaget is on to a winner in my opinion. THEN – we have Boaler(2016), telling us to encourage and value mistakes, promote group-problem solving- When I was in school I found it much less daunting if my maths and numeracy work was completed in a group setting so there were a few people to help me find the right answers and we all worked together, and in the end, if we didn't get the full correct answer we were all in it together and we could wait for forget teaching guidance. Boaler(2016), encourages confidence and mindset as a key to encourage numeracy in schools.

Now, getting down to it – schools can encourage numeracy by group work, time, praise for incorrect answers, using real life situations, house points, celebrating the little wins and reducing the anxiety for the word's mathematics or numeracy. Use problem solving and personalise/use pupil specific situations. But don't just rely on teaching staff either, home and community life must play their part!

References – Element 2

Blog

Boaler, J., 2016. *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching*. San Francisco, CA: Jossey-Bass.

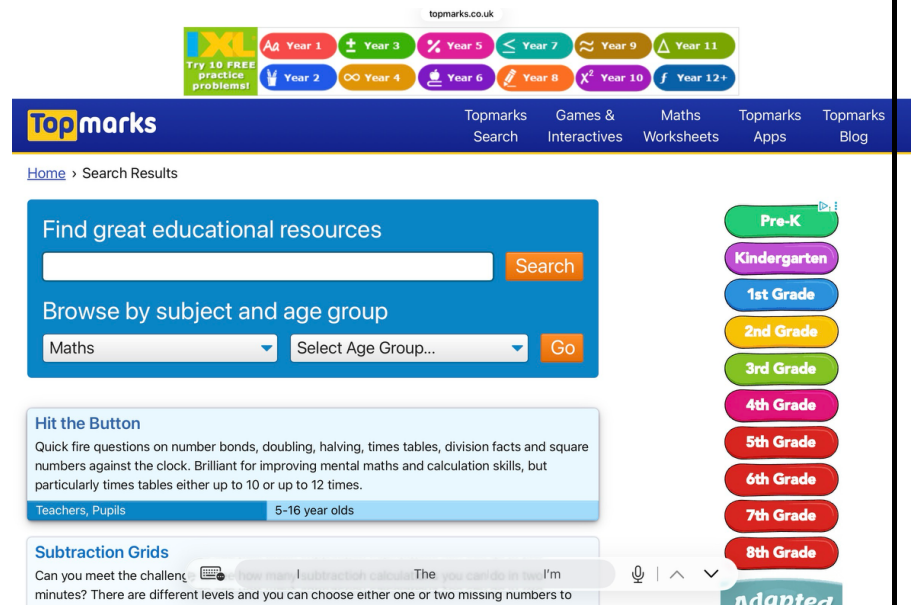
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What is it? How is it used? How will it help my learners?

Top Marks ICT Numeracy



An engaging, easily accessible resource to help you engage and encourage numeracy in your classroom.



What is Top-Marks?

Top marks is a UK based educational numeracy site used in schools. Top marks games are aligned to the UK National curriculum (Department for Education, 2014) and designed to aid building number sense through ICT interactive play. Top Marks offers a wide range of learning resources and activities for children of all ages, especially targeting younger learners like Primary School learners. It is specifically designed to be a safe, reliable, and interactive place for learning. Top Marks maths games offers different stages of mathematical solving problem games such as

- Counting and sequencing
- Addition, subtraction and multiplying
- Money, Data handling and shapes
- Number bonds and mental maths

WHAT DO YOU NEED?

RESOURCES

A digital aid such as a computer, iPad, Chromebook, phone

WILL I NEED WIFI?

The answer is yes, to access the mathematical site 'Top Marks' you will need WIFI connection.

WHAT KEY STAGES DOES 'TOP MARKS' TARGET - All key stages and is ALN supportive

Take a look inside

By Bethan Griffiths

Top Marks maths games are suited for early learners to end of primary learners but can also support older learners with gaps in numeracy and learners with ALN. Top Marks can be used for

- Play based learning
- Whole class interactive whiteboard sessions
- Maths provision

Top Marks supports differently learning styles like ALN, early learners and older learners. Top Marks ICT helps visual learners because it has a variety of colourful graphics, learners with ALN by having a 'less language heavy' platform and has a fine motor-skill focus by clicking, dragging, and interacting. Top Marks provides instant feedback, immediate correction, and self-paced learning. This supports regulation and resilience



Top Marks and this generation

By Bethan Griffiths



Today's learners/children grow up surrounded by screens, apps and technology feedback. Using an interactive ICT trampoline will help bridge home technology to classroom learning. For example, you could use Top Marks as a 'reinforcement' if you used 'old school learning' such as simple paperwork like working on 'Recognizing coins' then if your learners are encouraged that they can move on to 'Top Marks' computer games after they have completed their sheet, this generation of learners would much prefer to be working on screen. Top Marks could be used as an inductive and a reinforcement but also still kept as a meaningful resource.

What about theorist opinions?

By Bethan Griffiths

Piaget (1952) believed that children learn best when they discover things for themselves. Instead of just being told information, they understand more when they explore, try things out, and build their own knowledge through hands-on experiences.

Top Marks fits this idea because it lets children work with numbers in a visual and interactive way. They can try different answers, experiment, see what happens, and correct themselves. By learning through trial, mistakes, and feedback, they gradually build their understanding in a fun and practical way.

References – Element 3

Information sheet

Piaget, J., 1952. *The Origins of Intelligence in Children*. New York, NY: International Universities Press.

Department for Education, 2014. *The national curriculum in England: framework for key stages 1 to 4*. London: Department for Education.

Element 4 – Video of the resource in action

<https://share.icloud.com/photos/03c6jbZQYm0qS4ij-ChFbjItg>

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Evaluation

In this discussion essay, I will examine the advantages and disadvantages named through research and practical evaluation when selecting a suitable and effective resource to support and promote numeracy in schools, with a particular focus on learners with Additional Learning Needs (ALN). I will be linking the reasoning of this choice of my resource to theorists and how it helped make a decision of how to encourage numeracy in schools by just changing one small factor of planning. Beginning with a settings factor, pupil specific factors, Additional learning needs, added support and tailoring to the needs of many not just one.

The resource chosen was 'Top Marks', a UK focused ICT handling computer mathematical and numeracy skills games. The platform targets all ages and key stages, beginning with early years targets all the way to an older platform. The games provided are all subject differently, starting with games including coins and money focus, simple counting activities, quick fire questions on number bonds, Metal maths for addition and subtraction, interactive number grids, pattern recognition, times tables, decimals, and place value. Top Marks can be used played on any ICT platforms, it can be used for whiteboard/group activities and can also be used to encourage learners, as a 'reinforcement' or a 'working towards' /Now and Next strategy.

Top Marks mathematical ICT platform is not a. Formal curriculum framework, it is interactive and supports the National Curriculum for Wales (Welsh Government, 2020). The resources and games are designed to align with the usual numeracy learning goals such as for example addition, coins and money focus and times tables. To keep the visual interaction, the games provided on Top Marks are visual and colourful, interactive a, different in a sense of different symbols and characters, it can also focus on the seasonal timetable and changing games into interactive, fun Christmas games, spring games, and Chinese new Years.

Top Marks provides a highly rated online safe and engaging resources. Teachers' parents and carers can use it and its also free and versatile. Focusing on a theoretical base, Piaget (1952) core idea was constructivism. Meaning constructivism and knowledge actively through personal life experiences. Piaget(1952), believed that by using manipulation and problem-solving tasks

children intake knowledge. The following subject of Top Marks ICT platform links to Piaget (1952) by linking strongly to active learning, age-appropriate cognitive development, and a concrete reliable reductive to engage learners. Another reliable and safe policy link that is very important is the Welsh Government (2020) curriculum for Wales. This theory is linked by analysing progression, problem solving, and engaging the Four Purposes. Focusing on ALN based, learners need to be engaged and regulated. As a result of our newest generation, compete and ICT involvement are crucial to adapt with learning aiding engagement and not leading to boredom after learners seeing sheets and lots of paperwork. Immediate feedback is also a positive reaction and engagement. Top Marks provides immediate feedback and gives learned opportunities to retry the question if the answer is incorrect.

Even with the valuable, extensive, and reliable factors of Top Marks being a great and selective resource... Top Marks might not work equally well for everyone. Not all learners respond well to competition-based practice. Some students need structured and guidance modelling before they use platforms such as Top Marks. Even though Top Marks is LN focused and s designed to target early years-older key stages, games often reward speed and accuracy which can initially help some learners but not benefit learners who produce anxiety challenges. Games help practice, they are not particularly ‘teaching’ and can add pace and pressure. Top Marks can be great for fast recall learners breeds helpful for those who need regulation and processing time. Fast pace and pressure can be particularly nerve racking for pupils, especially with learners who have ALN, dyslexia/ and maths anxiety. Also, unfortunately Top Marks does not track progress overtime or have specific accounts unlike platforms like ‘Reading Eggs’. In summary top Marks can help many differentiated learners with high or low abilities but also isn’t for everyone.

Boaler(2016) theory relates to Top Marks maths games by the Mathematical focuses on growth mindset, depth of understanding and positive mathematical identity. Top Marks is related to Boaler(2016) by reducing maths anxiety, it makes practice feel less pressuring and threatening, increases the wellness to engage and builds confidence through repetition. All the games provided are the same but use different strategies and different key-stages. Encouraging persistence by using Top Marks games promotes Boaler(2016) theory by giving a growth mindset. Games allow repeated attempts until correction is achieved. Top Marks maths games provide instant feedback and encourage a “try again” theory. However, Top Marks Uk Maths games may connect with Boalers’ theory because

Boaler(2016) strongly criticises timed tests and speed-based maths. Boaler agrees that speed emphasis increases anxiety and discourages deep thinking which means some of Top Marks games may contradict her research. Boaler also emphasises discussion and reasoning and Top Marks typically focus on repetitive skill reinforcement. However, it does not develop problem solving discourage. In summary of a section of the following Boaler(2016) theory, Top Marks Games support Boaler with growth development, reduced anxiety if there is low pressure but deep conceptual understanding is extremely limited. Avoiding speed pursuit also often contradicts.

When looking at factors that should be considers when using top marks UK math games, the teaching practitioner, parent carer should consider is the subject your choosing supporting fluency or introducing updated content. Consider SEN/ALN needs, speed differences, maths anxiety, and avoid Top Marks for a lengthy period of time for overwhelmed learners incase of too much visual stimuli.

Overall, in a full summary of the evidence provided and self research regarding Top Marks maths games, it is particularly clear that there are valuable pros and cons to the Uk based ICT platform. Pros involving age-appropriate games, computer games being eye-catching to our generation of learners, and a visual base. Cons providing potential maths anxiety by speed factors and unfortunately does not track pupil progress.

References – Element 5

Essay

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