

Author: HIAS Maths Team

Published: October 2022

SEND Case Study Good Practice Guidance

Mathematics

Overview

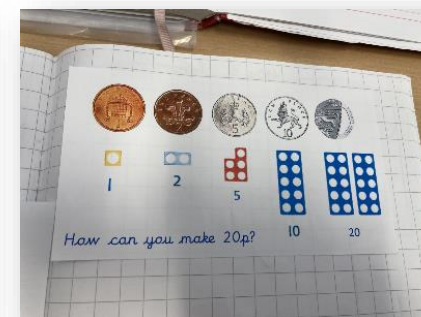
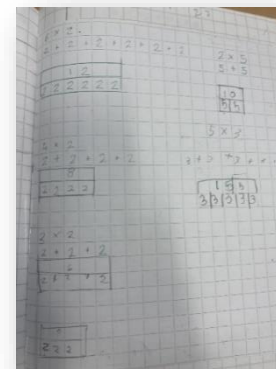
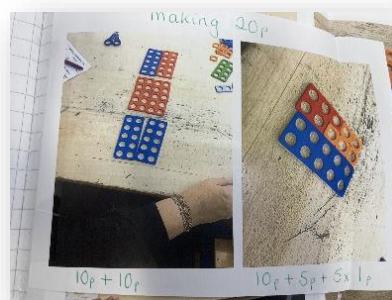
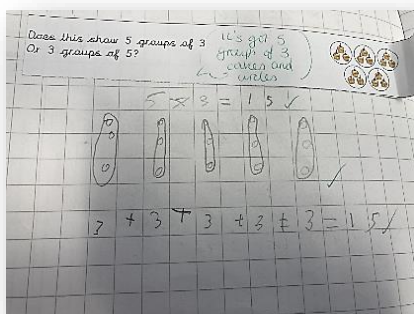
This document is a collection of SEND case studies which have been completed using a plan, do, review structure by Mathematics Managers and SENCo across Hampshire. The aim of this document is to provide schools with a bank of effective strategies, which have had a positive impact on pupils with SEND.

Points to consider when using this resource:

This document provides an outline of suggested strategies that could be implemented to support pupils with specific barriers to mathematics.

Focus Child: Year 3			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
<p>Cognition and Learning.</p> <p>Communication and Interaction.</p>	<ul style="list-style-type: none"> • Can be unfocussed in lessons. • Can become anxious in lessons. • Too many instructions can result in disengagement. 	<ul style="list-style-type: none"> • Work in class is closely matched to the pupil's needs and a rich range of representations support them alongside concrete resources which they access independently. • Time is given to overlearn key skills. • Utilise pre-teaching • Send home the language related to maths topics before the words are encountered in class. Reduce language used in task design. • Put the learning into context linked to the pupil personally to make learning relevant to real life. 	<ul style="list-style-type: none"> • Small steps of progress evident. • More confident to access whole class learning. • More independent access of concrete resources that are appropriate. • Can focus for more sustained periods of time and with support and prompts is able to engage in productive paired work with another child.

Examples

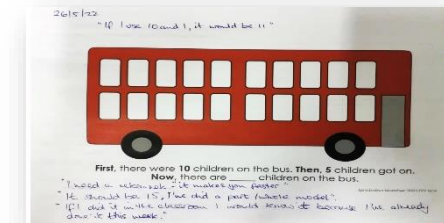


Focus Child: Year 1 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
Cognition and Learning.	<ul style="list-style-type: none"> Self-confidence to complete tasks independently. Self-help skills rather than waiting for an adult. Not secure with number facts to 10. 	<ul style="list-style-type: none"> Create photo cards of class resources for the pupil to access. Positive praise given when the pupil attempts a task independently. Set independent learning time, telling the pupil when the adult will return. Lengthen the time as the pupil becomes used to the system. Monitor participation/ progress within the NCETM Mastering Number Project Independently use Rekenrek as well as counters. Focus on sentence stems and patterning in tasks, talking through word problems and linking them to working wall examples. 	<ul style="list-style-type: none"> The pupil can recognise how prior learning and working walls can support their learning They will now find their own resources and has become less reliant on counting in ones (fingers and cubes) The pupil now subitizes and works in 5s and 10s, remembers number bonds within 10 and is starting to apply her knowledge to teen numbers The pupil is becoming more comfortable with challenging themselves and sharing ideas. The pupil now regularly uses sentence stems to structure their thinking. The pupil still finds word problems a challenge, but with help to read them, can quickly unpick the maths involved in a question The small steps, opportunities for practise, use of sentence stems and the Rekenrek have successfully built the pupil's independence & confidence

Examples

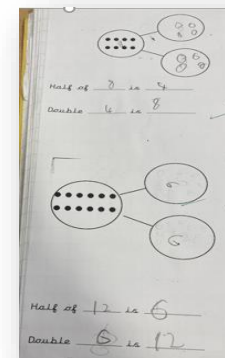
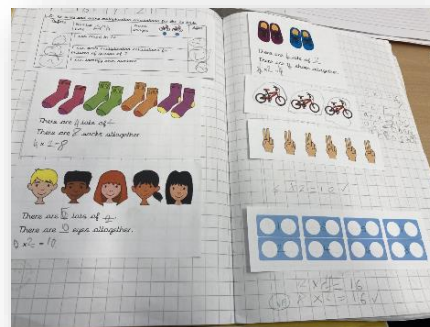
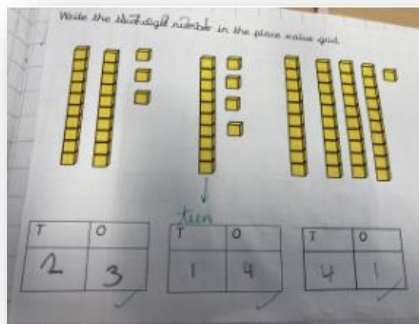
“I like thinking on my own and it makes me good in my tummy when I get one right.”

“I know the whole six is a 5 part and 1 more.”



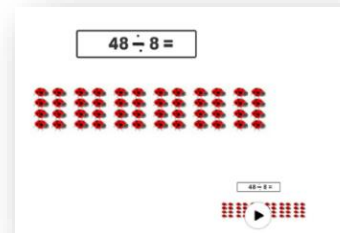
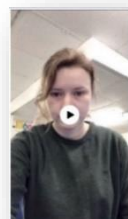
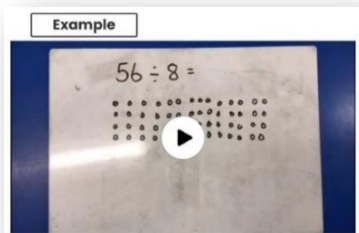
Focus Child: Year 3 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
<p>Cognition and learning</p> <p>Communication and interaction</p>	<ul style="list-style-type: none"> Progress is slow Retention of new learning. Speech and language 	<ul style="list-style-type: none"> Individualised learning journey which focuses on the key mathematical facts the pupil needed; made sure the number range was appropriate. Learning journeys that focus on a teach less but teach it deeply approach, enabling overlearning to support retention. Teacher or LSA capture the pupil's reasoning. Use the concrete, pictorial, and abstract approach (CPA) in all lessons to support and embedded the pupil's understanding. 	<ul style="list-style-type: none"> Monitoring shows work in books in now more in line with an appropriate number range for child's needs, rather than just adjusted slightly from the main class. A range of multi-representations were used which the pupil was able to transfer to various models and images. This showed their consolidation of key number facts. Small steps of progress evident. The pupil felt more confident representing their learning in various ways using the CPA approach.

Examples



Focus Child: Year 3 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
ASD – Autism Cognition and Learning.	<ul style="list-style-type: none"> Overly reliant on adults in the classroom. When left to work independent, they will not engage in the learning. Resilience is low. Retention of instructions. 	<ul style="list-style-type: none"> Seesaw – Create short videos on an iPad for the pupil that gave them prompts throughout the independent part of lessons. Videos should include simple instructions (e.g., write the date and the title as well as a short explanation/demonstration of the task to be completed by the child). The pupil can stop the video to complete the task then replay it when they were ready. Use headphones to help with focus when other talking taking place in the classroom. The tasks was tailored and re-designed to ensure they repeated learnt concepts for a longer period before moving onto another challenge or different representation of a problem. 	<ul style="list-style-type: none"> The pupil has made significant progress with their independence during the term. Observations showed the pupil engaging more readily with activities and completing work without adult support. The worked examples had a big impact on children’s confidence and independence, as they could replay the worked examples at any point that they needed a refresher. This meant they did not need to wait for adult support but could take more control over their learning and develop greater independence and confidence in their own abilities. Observations showed that the pupil is now often one of the first to have completed their date and title on their own at the start of the lesson. The biggest impact to maintaining this developing confidence is when the tasks have been specifically designed with an element of repetition.

Examples



Focus Child: Year 1 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
Cognition and learning	<ul style="list-style-type: none"> Lack of self confidence in their own knowledge and understanding and therefore avoids working independently. Understanding of key mathematical language. Retention of information. 	<ul style="list-style-type: none"> Explicit pre-teaching of language prior to lesson/unit. The class teacher and LSA record the inputs so the pupil could watch/recap the learning at the beginning of each day. Record explicit instruction using iPad and ensure lots of opportunities for child to re-visit – overlearning. (Support metacognition) Planned learning journeys to break the learning down into small sequential learning steps being careful to think about which element is being varied (one at a time, knowledge, skill, layout) Lowering the cognitive overload. 	<ul style="list-style-type: none"> The pupil made progress and retained more of the information taught. The pupil is now securing numbers to 20 in counting, recognition, and formation. When pre-teaching and recording of inputs was used the child was much more willing to actively participate in group and class activities and observed raising their hand to offer answers. Teacher shared that the use of overlearning with same L.O. but varied tasks have supported metacognition, especially in developing pupil's understanding of number. The use of diagnostic assessments along with pre-teach and use of small steps planning which breaks learning down into a progressive learning journey is working well and LSA and teacher work together to support the provision of this. The pupil has been observed choosing to continue maths learning in continuous provision and was able to use and apply what they had learnt the previous day.

Focus Child: Year 6 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
Cognition and learning	<ul style="list-style-type: none"> Over-reliant on adult support. Refuses to work independently. He had very low confidence in his academic ability and had become Extremely disengaged with his learning. Struggled to retain information that did not engage his interests and he struggled to refer back to previous work. This pupil prefers to work out calculations mentally but can lose concentration during this process. 	<ul style="list-style-type: none"> Embed CPA approach Recap key learning from Year 2 upwards to provide more solid understanding before considering the Upper KS2 content. Create an individual working wall for the Maths unit. This is to be annotated by the pupil at any time and can be used alongside Maths work in class and in post/pre-teaching intervention time. The pupil will identify the information required to support them in their challenges from this working wall. The adult can support this process, but the focus must be on the child taking ownership and not relying on the adult to provide support at every stage. Encourage the pupil to explain their understanding to other pupils within the class. 	<ul style="list-style-type: none"> The pupil's focus and participation has increased in maths lessons. They are finding success in working within class with the support of the class teacher. The pupil's confidence has increased – "I was always working outside last year because I didn't get it but now, I think I can do some of it." With this boost in confidence, they have been able to explain his understanding to the rest of the class. Observations show the pupil is retaining new learning. The CPA approach provided opportunities to overlearn and to make connections. The individual working wall document allowed the pupil to refer to learning after the class working wall has moved on has helped them access prior learning.

Examples

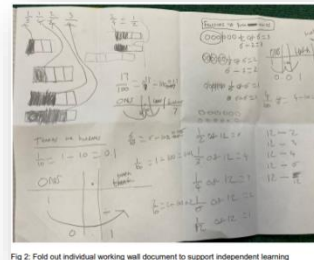
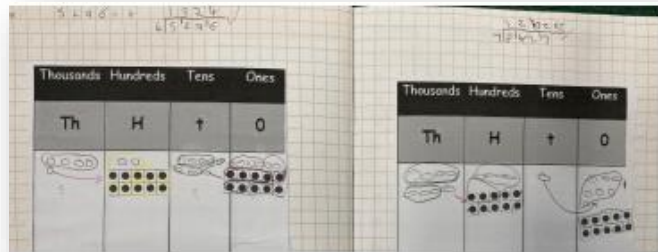


Fig 2. Fold out individual working wall document to support independent learning

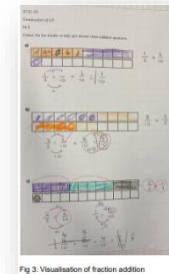
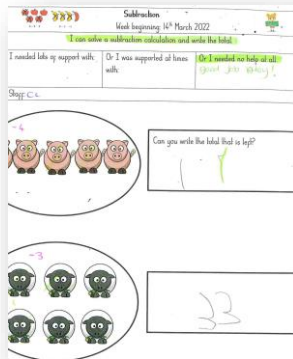


Fig 3. Visualization of fraction addition

Focus Child: Reception pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
Cognition and learning	<ul style="list-style-type: none"> • Unable to count to 10 • Unable to understand the cardinality of a number. • Number formation 	<p>Daily small group work:</p> <ul style="list-style-type: none"> • 4 times a week - Hear the children recite numbers 0-20. Have a number line in front of them so they can touch the numbers as they say them. • Once a week - Laminate some number writing strips – see below. Make sure 1 is just a line. Ask them to trace over the grey line and then free hand below. • Once a week - Flash card numbers 3, 4, 5, 6, 7. Create flash cards which are going to spark memory for these number names e.g., number jacks. • Once a week - Give 3, 4, 5, 6, 7 or 8 objects e.g., cubes. Ask them to arrange them in the numicon pattern to see if they have 3, 4, 5, 6, 7 or 8 items. Match the quantity to the number card. May need training with smaller numbers first. • Adults to ask key questions during continuous provision. - Who has more? Less? Larger number? Smaller number? 	<ul style="list-style-type: none"> • Pupil can has made good progress. • The pupil can confidently count to 10, order numerals and use the vocabulary of addition. • The pupil is forming their numbers correctly now.

Examples



Subtraction
Week beginning 14th March 2022

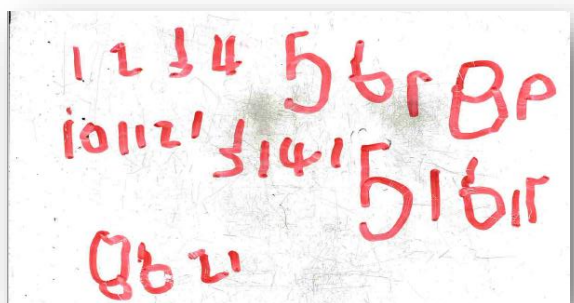
I can solve a subtraction calculation and write the total.

I needed lots of support with... Or I was supported at times... Or I needed no help at all!

Step: C-4

Can you write the total that is left?

33



1 2 3 4 5 6

10 11 12 13 14 15

16 17 18 19 20

21

Focus Child: Year 2 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
<p>Cognition and learning</p> <p>Sensory and/or physical needs</p>	<ul style="list-style-type: none"> • Struggles to still on a chair or the floor. • Support needed for their number formation due to poor fine motor skills. • Poor gross motor skills 	<ul style="list-style-type: none"> • Physical development is a Prime Area of Learning. • Wobble cushion to help with the pupil's core body strength. • Daily gross motor skills tasks - animal walks and other activities from the Solent pack. • Daily fine motor skills tasks using the "Solent Pack" 	<ul style="list-style-type: none"> • Concentration had improved and the pupil has responded well to sitting on a wobble cushion. • The pupil's concentration was assessed to be 5 minutes prior to intervention and after intervention it rose to 15 minutes. • Posture and seating position is greatly improved (see photos) and the pupil is very positive about the cushion and will carry the cushion to all areas of the class where he needs to sit down. • Posture and behaviour on the carpet has improved too.

Examples

Initial assessment on the pupil's typical seating position.

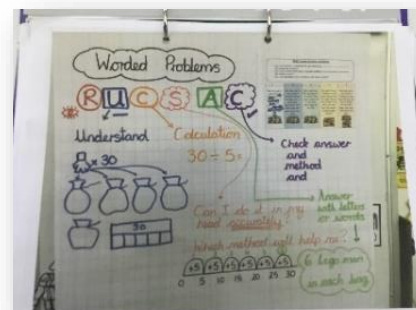
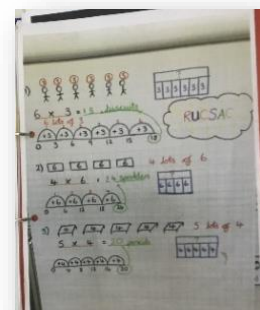
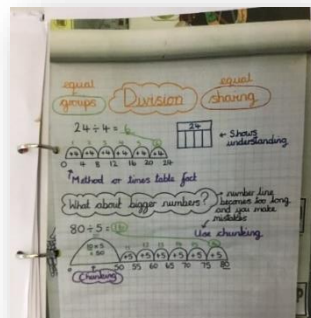
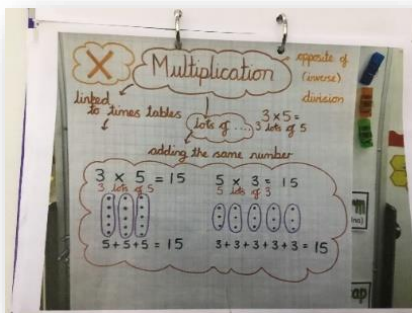


Assessment after one term on the pupil's typical seating position.



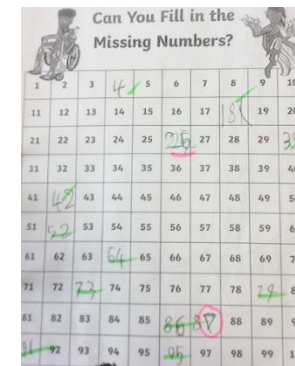
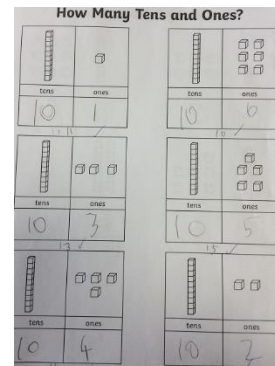
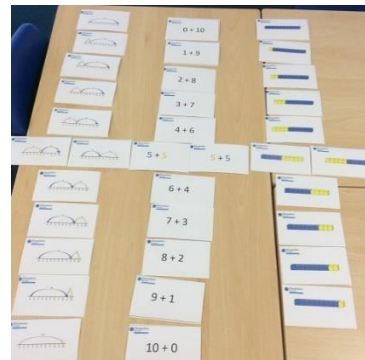
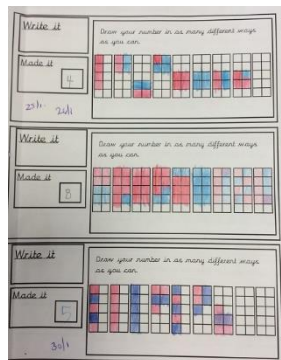
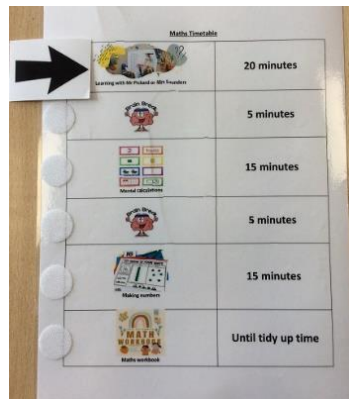
Focus Child: Year 3 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
Cognition and learning	<ul style="list-style-type: none"> Confidence in maths lessons. Retaining basic maths skills. Conceptual and procedural understanding. Lack of independence. 	<ul style="list-style-type: none"> Use the flipchart to scaffold and model new learning. Modelling from the flip chart then went on the maths working wall and was photographed to form a 'knowledge organiser'- a visual reminder. This formed part of an on-going visual support folder. Use 'knowledge organisers' so pupils can access models and methods taught along the journey to apply in their independent learning. Plan calculation fluency practice weekly to allow the method being taught to be embedded. 	<ul style="list-style-type: none"> The early signs are very positive: the pupil was observed using the visual supports to help her access the learning in class and as a result their confidence has grown, and they are having more success in the class sessions. The use of the personalised model sheets supported to reduce the cognitive load, which is enabled the learner to be more successful in the maths lessons. The Year 3 pupil is growing in confidence, and used the visual support folder independently, as and when they needed it.

Examples



Focus Child: Year 3 pupil			
Area of SEN	Barriers to Mathematics	Strategies Implemented	Impact
<p>Cognition and learning.</p> <p>Social, emotional and mental health.</p>	<ul style="list-style-type: none"> Lack of self-confidence – hinders independent completion of tasks. Over-reliance on adult support rather than helping self. Not secure with number facts to 10. 	<ul style="list-style-type: none"> Create visual activity timetable and display for children to use. Create matching cards resource. Create individual pupil resources for the pupils to access. Adult to support learning activities to begin, then increase independence as routines become established. Overlearning of key skills implemented, based around a teach less but teach it deeply approach. Concrete, pictorial, abstract approach used to support learning and embed understanding. 	<ul style="list-style-type: none"> Small steps planning communicated between the teacher and LSA has resulted in pupil progress. Pupils' confidence had built across the term and has enabled them to access whole class teaching and learning. Repetition in a variety of ways has helped the children to remember number bonds within 10. The timetable partially supported the pupils to be more independent. An amended, simpler version will be implemented to achieve greater independence. <p>Pupils are now securing numbers to 20.</p>

Examples



HIAS Maths Team

Jo Lees – Lead Inspector
Email: jo.lees@hants.gov.uk

Kate Spencer – Lead Inspector
Email: kathryn.spencer@hants.gov.uk

Rebecca Vickers – Teaching & Learning Advisor
Email: rebecca.vickers@hants.gov.uk

Nikki Barber – Teaching & Learning Advisor
Email – nicola.barber@hants.gov.uk

Olivia Goodburn – Teaching & Learning Advisor
Email – olivia.goodburn@hants.gov.uk

For further details on the full range of services available please contact us using the following email:

htlcdev@hants.gov.uk

Upcoming Courses

Keep up-to-date with our learning opportunities for each subject through our Upcoming Course pages linked below. To browse the full catalogue of learning offers, visit our new Learning Zone. Full details of how to access the site to make a booking are provided [here](#).

- [English](#)
- [Maths](#)
- [Science](#)
- [Geography](#)
- [RE](#)
- [History](#)
- [Leadership](#)
- [Computing](#)
- [Art](#)
- [D&T](#)
- [Assessment](#)
- [Support Staff](#)
- [SEN](#)