

# Impact of school closures on KS1: Autumn 2020

## Potential implications for practice in year 2



This diagnostic information is part of a study investigating the impact of school closures on children in Key Stage 1, conducted by the National Foundation for Educational Research (NFER) and funded by the Education Endowment Foundation.

The first wave of this study compared the performance of almost 6000 year 2 children in autumn 2020, using standardised assessments, with the performance of a standardisation sample in autumn 2017. The interim findings confirmed that year 2 children have significantly lower achievement in both reading and mathematics as a likely result of missed learning and that the disadvantage gap has widened compared to Key Stage 1 national curriculum assessments in 2019. This study is ongoing throughout the 2020-21 academic year and will also look at the impact of further school closures, which began in January 2021. The next data collection is planned for spring 2021 and will involve both year 1 and year 2 children. For more information, please see the [interim findings](#).

Although these findings are concerning, this document is intended to help teachers in the difficult times in which we find ourselves, equipping them with evidence to inform their practice so they can begin to repair the effects of ongoing school closures. The diagnostic information given in this document is based on the analysis of the year 2 children in this study, and while there are themes, schools may find it useful to carry out their own diagnostic assessment to decide where suggestions for practice may be applicable to their pupils.

The potential implications for practice outlined are intended to put the findings from the study into context, offering ideas for learning rather than being explicit and definitive activities. They are intended to complement and work in partnership with broader school efforts, to support wellbeing and ensure outcomes for children, such as targeted catch-up, cross-curricular learning and the development of experience-rich curricula. The potential implications for practice were also created with a range of learning scenarios in mind: some are more suited to 'live' lessons or school-based interaction whereas others may fit more readily into pre-recorded lessons or as independent or remote learning tasks.

### This document contains:

- a summary of the headlines across both reading and mathematics
- an overview of the key findings for reading and mathematics
- further information and potential implications for the eight key findings in reading, including ideas for activities.
- further information and potential implications for the eight key findings in mathematics, including ideas for activities.

The following documents provide further useful information and support the implications for practice in this document:

[Improving Literacy in Key Stage 1 | Education Endowment Foundation | EEF](#)

[Improving Mathematics in the Early Years and Key Stage 1 | Education Endowment Foundation | EEF](#)

[Metacognition and Self-regulated Learning | Education Endowment Foundation | EEF](#)

## Both subjects

- Overall, year 2 children did less well in 2020 than year 2 children did in 2017.
- In general, the curriculum areas that children found challenging in 2020 were those found challenging in 2017.
- Disadvantaged children performed less well than other children on all questions, across both subjects, and were less likely to attempt questions towards the end of the assessments.
- Data suggests that the gender gap, the performance difference between boys and girls, has remained stable since 2017. Boys still do less well than girls in reading but do marginally better than girls in mathematics.

## Reading

- Evidence from 2020 suggests that the disruption to schooling has had the greatest effect on children who are still at the early stages of learning to read. This pattern was the same for disadvantaged and non-disadvantaged children.
- Across the test, the biggest difference in performance in 2020 compared to 2017 was on questions based on the first and easiest text.
- Although children tended to work through to the end of assessments, children in 2020 were more likely to miss out questions than in 2017. In 2020, this was particularly true for boys and disadvantaged children.
- Of the curriculum areas assessed, inference remained the hardest and retrieval the easiest. Questions which required children to use the text to understand the meaning of given words, appeared to be the least affected.

## Mathematics

- Overall performance on reasoning and arithmetic papers was lower than 2017.
- In 2020, children rarely used written strategies. However where they did opt to use one, strategies to support counting were the most common.
- There is little evidence to suggest that children have lost their resilience – their resolve to complete the papers – since 2017. The rates of children reaching the end of the papers were largely the same; omission was slightly higher in 2020.
- Curriculum areas which children tend to find more challenging saw the biggest drop in performance in 2020. Average performance on questions which assess skills taught in year 1 was often at least as good as in 2017. This may be a result of consolidation in the autumn term of 2020 rather than the introduction of new material.

## Reading



Children continue to need support with inference, for events and emotions.



Developing understanding of narrative sequencing may be beneficial.



Children may need support to understand a character's motivation.



Comprehension was sometimes affected by reliance on illustrations.



Children need support to organise and utilise key information.



Children found it more difficult to provide longer written responses.



Children may benefit from more experience with a range of non-fiction texts.

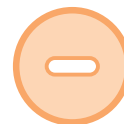


Children may struggle to interpret question words.

## Mathematics



Children's ability to add numbers has improved slightly; however, they struggled with bridging tens.



Children's ability to subtract numbers has improved slightly; however some aspects may need strengthening.



Children are finding it more difficult to multiply numbers.



Children need support to develop their ability to divide numbers.



Children need support in developing the foundations of understanding fractions.



Children seem secure in most areas of number recognition, place value and counting in steps, backwards and forwards.



Children would benefit from a continued focus on money and interpreting analogue clocks.



Most children are secure with bar charts but may need support to interpret tally charts.



Children continue to need support with inference, for events and emotions.

Children found questions requiring inference skills the most challenging overall in both 2017 and 2020. This skill involves using information in the text to arrive at another piece of information which is implicit. Some children struggled to give specific inferences that were supported sufficiently by the text. These children tended to give generic inferences, e.g. 'He was kind', instead of more contextualised answers such as 'He looked after her pet'.

When inferring emotions, children were more likely to provide generic emotion words such as 'happy' or 'sad', rather than more specific emotions such as 'relieved' or 'lonely', which were more relevant to the story events.

## Potential implications for practice

Inference could be supported by activities which externalise and structure children's thought process, for example:

- exploring one scene of a story in detail and using stepped questioning like 'what is the character thinking?', 'how do you know this?' and 'can you underline the part of the text that tells you this?'

While teaching vocabulary for specific emotions will help with naming characters' feelings in texts, children's emotional literacy goes beyond a specific reading skill. Activities which could build vocabulary and understanding could include:

- role playing or emotion charades
- exploring shades of emotion e.g., by creating a continuum of an emotion, such as exploring words that connote happiness
- mind maps where children can collect their experience of an emotion, where they've seen the emotion in fictional characters and images and colours associated with it.



Developing understanding of narrative sequencing may be beneficial.

Evidence suggests that children struggled to fully understand the sequence of events in the stories. In some instances, lower attaining readers misunderstood when major plot points occurred, with their knowledge of what happened later in the story confusing how they understood earlier events.

Several of children's misunderstandings about character emotions stemmed from confusion over what events had already occurred and / or what the characters knew / were aware of at that point in the story.

## Potential implications for practice

Children's understanding of narrative sequence could be supported by activities such as:

- reading a rich and broad range of texts in order to build their familiarity and experience with different genres and their conventions
- breaking down stories into different lessons across days, so that children can practise recapping and predicting the next events
- story mapping and story restructuring which may also help children understand story chronology
- activities that help children to identify how a character feels and why at different points in a story, such as emotion graphs. This may help them to track the progression of a character's emotions through a narrative, and understand the cause and effect relationship with the events of the plot / other character actions.



**Children may need support to understand a character's motivation.**

When children were asked to complete a speech bubble showing what question a character asked in the story, the majority of children were able to structure their response as a question in the 2nd person.

However, one of the common misconceptions was related to children misunderstanding the character's motivation and providing a question which, though relevant to the story, would not help the character achieve their goal.

## Potential implications for practice

Suggestions which may help to support children's understanding of character motivation include:

- teacher demonstrations of a character's potential thinking, modelling the metacognitive strategies which support comprehension using evidence from a text
- speech or thought bubble activities can be a useful way to help support children's inference skills and their understanding of what characters believe, understand or feel at different points in a story
- creating dialogue between characters for 'missing' scenes in a story, taking into account emotion tracking and the impact of other characters' actions.



**Comprehension was sometimes affected by reliance on illustrations.**

Several of the misconceptions that children demonstrated on the fiction texts seemed to arise from an over-reliance on illustrations. Though illustrations can be useful to support comprehension, they only depict part of the story and so over-dependence on these can cause 'gaps' in comprehension. This may be children who are struggling to decode or make inferences from a text, and so may resort to using the illustrations to inform their understanding. There was some evidence that boys were more likely to show this pattern.

## Potential implications for practice

Children who rely on illustrations may benefit from:

- explaining what a story illustration is showing them and finding the part of the text that supports this
- practice matching different pictures to points in a story
- modelling how illustrations can be used effectively to support certain aspects of reading, e.g. prediction and inference
- guided discussion to evaluate the limitations of using illustrations as a comprehension strategy, e.g. comparing predictions with events.



**Children need support to organise and utilise key information.**

In 2020, children found retrieval questions, where they have to identify key information and events from fiction and non-fiction texts, harder than in 2017. Disadvantaged children found these questions comparatively hard. A common error identified was where children incorrectly answered retrieval questions with other prominent information in the text. This suggests children are able to pick out the key information, but struggle to organise or utilise it to answer specific questions.

## Potential implications for practice

To support children with this skill, teaching could focus on the reorganisation and utilisation of information from texts. This prompts children to not only identify key information from texts, but to recognise its purpose. Activities could include:

- creating a shopping list from instructions
- making a character fact-file from a story
- writing instructions from an information text.

Additionally, developing children's metacognition strategies, e.g. through modelling and scaffolding, may support children in how they organise information from a text and understand what they have read.



Children found it more difficult to provide longer written responses.

In 2020, children found questions which require a longer written response harder than in 2017. Although this pattern is true for all groups, evidence suggests that boys performed less well on all written questions (short and long), in comparison to girls. All children were also more likely to miss out these types of question.

There may be several different underlying reasons why children struggle with longer written responses. These include confidence, reading or handwriting fluency and self-regulation of planning, monitoring and writing responses.

## Potential implications for practice

Activities which support children's engagement with texts through writing are likely to promote their confidence and fluency with written responses. Suggestions for practice will vary depending on the underlying reasons for children's difficulties with written responses, but could include:

- the 'reorganisation' and metacognition activities already discussed
- templates / writing frames for news reports and book reviews to scaffold children's responses to texts in varied ways
- modelling the planning and editing of extended written responses, encouraging children to evaluate their own writing and that of their peers.



Children may benefit from more experience with a range of non-fiction texts.

Children struggled with interpreting information from a non-fiction text, compared to fiction texts. This was true for the children in 2020 as well as the 2017 cohort. Children's confusion of prominent information in response to retrieval questions, already discussed, contributes to this overall difficulty with non-fiction texts. Children who did not locate their answers in the text performed less well across the reading assessment as a whole.

## Potential implications for practice

Increasing children's experience with a range of non-fiction texts would help them to become more familiar with the different ways information is presented across text types. This could be by, for example:

- exploring different non-fiction texts such as instructions, recipes, leaflets and newsletters among others
- using simplified non-fiction text exemplars to introduce this genre in an easier and supported way
- giving children the opportunity to create non-fiction texts to support their understanding of its features.



Children may struggle to interpret question words.

Analysis of performance in 2020 suggested that children were confusing question words such as how, why or what, causing them to misread or misinterpret questions about the text. Children's responses suggested that sometimes they were responding to the question topic as a "why" or "what" question when the phrasing was actually "how". In particular, children struggled to answer 'how can you tell' questions, confusing these with 'why'.

## Potential implications for practice

Teaching could focus on children's understanding of question words, for example:

- explore examples of question words used in everyday contexts as well as in stories and non-fiction texts
- model questioning and metacognitive strategies to check understanding through high-quality language interactions about texts
- through guided reading activities, which could ask about the same topic using different question words e.g., What is the character doing? How can you tell? Why might they be doing it?



Children's ability to add numbers has improved slightly; however, they struggled with bridging tens.

In 2020, children performed slightly better across addition questions than in 2017, particularly when adding three one-digit numbers. Whilst they were more likely to be successful when given a visual aid, the most common strategy shown was that of using marks to support counting.

When adding two two-digit numbers, children were equally successful when faced with a word problem as they were with a visual aid, such as Dienes, where the question did not require them to bridge through tens. However, when bridging was required, more children omitted the question and some gave an incorrect tens value.

The majority of children did not display any working. Those who did, however, tended to use partitioning when the question was written as a sum and counting when given a word problem. Slightly more children were able to correctly answer a missing number problem within addition than in 2017.

## Potential implications for practice

Children who struggle with addition could be supported by activities which:

- use visual aids / pictures to scaffold more basic addition
- reinforce and physically represent number bonds to 10 and 20, particularly as part of larger numbers, to support bridging through tens within calculations
- promote a range of strategies when solving word problems with addition, particularly those which involve bridging tens.



Children's ability to subtract numbers has improved slightly; however some aspects may need strengthening.

As with addition, children were able to subtract both one- and two-digit numbers as well as or better than the cohort of 2017. Although the majority showed no working, more children did so for these questions than any other type of calculation. Where this was the case, the most common strategy used was counting which was often successful. However, it did result in some children giving an answer that was one off the correct solution.

Like addition, slightly more children were able to find a missing number within a subtraction question than in 2017. However, as in 2017, they found it very difficult to place missing signs into a subtraction calculation and had a tendency to ignore the order of the numbers. This was also seen in children's responses to a subtraction word problem where the numbers appeared in the opposite order to how they should be calculated. The concept of subtraction not being commutative is new to year 2 and therefore may not yet have been covered.

## Potential implications for practice

Children struggled with the accuracy and suitability of strategies, as well as the fact that subtraction is not commutative like addition. Activities to strengthen these aspects could be:

- discussion and exploration of different strategies which can be used for subtraction
- the use of physical representations of tens and ones to partition numbers so children can see the value of different numerals within a number when they are subtracted
- investigations into the commutative principle across subtraction and addition, e.g. regrouping activities with cubes
- varying the calculation order within word problems and subtraction problems, progressing from one-digit to two-digits.



Children are finding it more difficult to multiply numbers.

Compared to 2017, children found it more difficult to answer multiplication calculations that required them to recall facts for the 2, 5 and 10 multiplication tables. Where children displayed their working for these questions, most chose a method that allowed them to count marks or pictures rather than trying to recall facts.

In multiplication calculations, children were able to find a missing number when it was the product, even if this was 'reversed' ( $? = a \times b$ ). However, they struggled to calculate a missing number which was part of the operation in the calculation ( $? \times b = c$ ). In both cases, a common error identified was where children treated this as an addition calculation.

## Potential implications for practice

Activities which can build on children's multiplication knowledge and recall for calculations, in particular missing number problems, could be:

- revisiting quick recall multiplication facts, as with sequences, through games and real life examples
- investigation into strategies, such as those discussed in addition and subtraction, could include specific goals to find where multiplication facts can be used
- collecting the language associated with multiplication as children meet it in word problems
- representing missing number problems through practical resources to find the answers, varying which part of the calculation is missing.



Children need support to develop their ability to divide numbers.

Evidence suggests that children in 2020 struggled more with division questions, compared to 2017. For word problems, children preferred to draw pictures of the items before dividing them up rather than recalling division facts which are new content for year 2.

A common error identified was where children treated the division calculation as either an addition or subtraction. This could be due to misreading the question or insecure understanding of operations. Another common error was where children gave the divisor as the answer. Again, this may suggest that children's concept of division is insecure as they believe that dividing into a number of groups gives that number.

Nevertheless, children were equally successful whether presented with a division calculation, word problem or matching exercise. This would suggest that once children are comfortable with the concept of division they can apply it across a range of problems.

## Potential implications for practice

To support children's concept of division, teaching could focus on reinforcing key qualities and language associated with this operation. Activities could include:

- ensuring a secure concept of sharing through physical resources, before moving on to sharing through pictures
- collecting the language associated with division as children meet it in word problems
- as with other operations, using story-telling and roleplay to see division in context and support children's understanding of what is happening to different numbers when they are divided.





Children need support in developing the foundations of understanding fractions.

In 2020, children found fractions more challenging than in 2017. Many children struggled with all aspects of fractions including identifying fractions of collections and shapes shaded, often confusing halves and quarters. Fractions are introduced for the first time in year 1 and this is a critical time to teach the foundations of what fractions represent. As the school closures interrupted the education of these children when they were in year 1, it is likely this introduction to fractions was also disrupted. In particular, children found it more difficult to find a quarter of a collection, taught in year 1, than finding half of a number, a skill taught in Year 2. A common error identified was where children were asked to give their response as a fraction but gave a number instead.

## Potential implications for practice

Teaching to support children's foundational understanding of fractions could include:

- reinforcing the key qualities of fractions through language, such as '1 of 2 equal parts'
- practical activities with real life collections and different objects or shapes cut into half
- activities to draw out and challenge misconceptions, such as activities where divisions create 2 unequal parts
- an initial teaching focus on halves, with a progression to quarters taught alongside halves, to help children to recognise the similarities in key qualities (equal parts) as well as the differences between the two.



Children seem secure in most areas of number recognition, place value and counting in steps, backwards and forwards.

Children in 2020 showed a secure understanding of sequences and basic number work and performed as well as or better than the 2017 cohort. In 2020, children were confident counting back in 1s and forwards in 2s and 10s. However when counting in 3s, an area introduced in year 2, they did not do as well as children in 2017.

Children in 2020 showed a better understanding of place value and using inequalities than the 2017 cohort, although both groups performed well. With most areas of number, including number recognition and placing a number on a number line, there was no drop in performance, however, only half of the children in 2020 were able to recognise odd and even numbers, a much lower proportion than in 2017. Children's responses suggested they were using the tens digit to determine whether the number was odd or even instead of the ones digit.

## Potential implications for practice

Children seem secure in their understanding of many aspects of number expected in the first term of year 2. It is important this understanding is maintained through:

- regularly revisiting sequences in short bursts, such as chanting and playing counting games throughout the school day or week
- using sequences in real life and cross-curricular contexts.

It is important that children understand what makes a number odd and what makes a number even. This could be done through:

- practical investigation into number properties
- children creating and playing games related to odd and even numbers, e.g. by creating a board game with different rules for landing on an odd or an even number.



Children would benefit from a continued focus on money and interpreting analogue clocks.

Money continues to be a topic area which children in 2020 struggled with, although no more so than children in 2017. Children found it difficult to recognise the same amount made by different coins, as well as the total cost of different objects.

When identifying half past on an analogue clock, children in 2020 also struggled and did not perform as well as children in 2017. They showed confusion with the minute and hour hands and also did not recognise that when finding half past on a clock, the hour hand must be past the hour and not directly on it. It is possible that children are becoming increasingly less exposed to analogue clocks, particularly in non-school life which could cause difficulties in reading these clocks.

## Potential implications for practice

Children's understanding in money can be supported through:

- using practical activities, such as real life use of coins as well as play
- using physical representations, such as the number of 1p coins to make 10p.

Children would also benefit from further practice and exposure to clocks showing half past and quarter past, particularly in activities such as:

- using visual timetables with analogue clocks
- explicit explanations about what is happening to the hour hand and the minute hand when looking at different times
- making their own clock from a paper plate and having access to it throughout the day to regularly reinforce times and minute and hour hand movement.



Most children are secure with bar charts but may need support to interpret tally charts.

In both 2017 and 2020, children demonstrated a good understanding of bar charts but found tally charts much more challenging in 2020. When answering a question on tally charts, the large majority of children correctly interpreted that they needed to add two of the four categories with tally counts, yet incorrectly identified which two categories these were. This may suggest that children know how to calculate with tallies, but struggled to interpret the chart and headings in order to answer the question correctly. This misunderstanding may be applicable to other areas of data representation, such as tables.

## Potential implications for practice

Children would benefit from opportunities to look at a range of tables and charts, which could be done through:

- discussions to help children verbalise what a tally chart or table is showing. This will help reinforce their understanding of structure and organisation, and how to interpret the data
- cross-curricular opportunities for children to create their own tables and reorganise information into tables, possibly from stories or collecting information in science or P.E.