

Impact of school closures on KS1: Spring 2021

Potential implications for practice in year 1



This diagnostic information is part of the second wave of a study investigating the impact of school closures on children in Key Stage 1 (KS1), conducted by the National Foundation for Educational Research (NFER) and funded by the Education Endowment Foundation. As part of this second wave in spring 2021, standardised assessments in reading and mathematics were used to explore the performance of more than 5100 year 1 children and 5200 year 2 children. Performance was compared to a standardisation sample from spring 2019. The findings from the first wave of this study in autumn 2020 can be found in [Interim Paper 1](#). This study has its final wave of data collection planned for summer 2021, involving both year 1 and year 2 children.

The interim findings from spring 2021, published as paper 2, confirmed that year 1 children have significantly lower achievement in both reading and mathematics in comparison to the standardisation sample, and that children from disadvantaged backgrounds are around seven months behind their peers. These findings also confirmed that year 2 children still have significantly lower achievement in both subjects and that the disadvantage gap remains wider than the results of the KS1 national curriculum assessments in 2019. For more information, please see the [Interim Paper 2](#) available on the EEF website.

Although these findings about overall attainment are concerning, this document is intended to equip teachers with evidence to inform their practice so they can support children's academic progress which may have been impacted by partial school closures. The diagnostic information given in this document is based on the analysis of the responses of the 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 progress for children, such as targeted catch-up, cross-curricular learning and the development of a broad and balanced curriculum.

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 key findings in reading, including ideas for activities
- further information and potential implications for the key findings in mathematics, including ideas for activities.

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

[Improving Literacy in Key Stage 1](#)

[Improving Mathematics in the Early Years and Key Stage 1](#)

[Metacognition and Self-regulated Learning](#)

[Improving Social and Emotional Learning in Primary Schools](#)

Both subjects

- Overall, year 1 children did less well in spring 2021 than year 1 children did in 2019.
- In general, the curriculum areas that children found challenging in spring 2021 were those that they found challenging in spring 2019.
- Children from disadvantaged backgrounds 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 on most papers.
- Data suggests that the gender gap, the performance difference between boys and girls, has remained broadly stable since 2019. Boys still do less well than girls in reading but do marginally better than girls in mathematics.

Reading

- In spring 2021, evidence indicated a drop in children's performance across all sections of the assessment.
- Children in spring 2021 were less likely than children in 2019 to reach the end of the first, less challenging, paper.
- In spring 2021, children were also more likely to miss out questions than in 2019. This is particularly true for boys and children from disadvantaged backgrounds.
- As in 2019, of the curriculum areas assessed, vocabulary questions were the easiest and inference remained the hardest. However, although vocabulary questions were the easiest, the data suggests they were the most affected by the disruption to schooling.

Mathematics

- Overall, children's performance on the reasoning and arithmetic papers was lower than in 2019.
- In spring 2021, children rarely used written strategies but when used, engaging with images or drawing marks or images to support counting were the most common.
- In spring 2021, children were less likely to reach the end of both papers compared to children in 2019, although the difference was much greater for the reasoning paper. In 2021, children were also more likely to omit questions than in 2019.
- Curriculum areas with a greater focus in year 1, e.g. addition and subtraction, tended to have the least drop in performance in comparison to 2019. Topics such as multiplication and division, clocks and money recognition make up a smaller proportion of the curriculum in year 1 and were more affected.

Reading



Children need support with identifying and inferring emotions.



Children may benefit from support integrating information when listening to stories.



Children found understanding multiple parts of a sentence challenging.



Comprehension monitoring proved challenging for some children.



Children may need support with writing skills and locating answers in the text.



Children may need help to understand key concepts in fiction texts, particularly those which are abstract.

Mathematics



Children's ability to add and subtract numbers with visual aids is mostly secure; however they need practice bridging tens and with unconventional problems.



Children need support to develop their understanding of multiplication and division.



Children need support with recognising a quarter of a shape and finding fractions of a quantity.



Children are secure in some areas of number recognition and counting; however some aspects may need strengthening.



Children are secure in most areas of measures; however they may benefit from support with telling the time and money recognition.

Reading – Year 1

Aural comprehension

In the first section of the assessment pupils listened to a story and questions read aloud by their teacher. Although children's scores on aural comprehension were lower than in 2019, performance in this section was the least affected and children's aural comprehension skills have remained fairly strong compared to their reading comprehension at sentence or text level. This may be expected given this section placed little demand on children's developing decoding skills.

There was some evidence that boys' performance in aural comprehension was more impacted than girls'. However, the aural comprehension section showed the smallest attainment gap between disadvantaged and non-disadvantaged children.

In this section, questions required children to select their response from a set of pictures, simple words or short phrases. Despite this section being least affected, all items in this section, apart from one, proved more challenging for children in 2021. From analysis of responses in this section, two key findings were identified.



Children need support with identifying and inferring emotions.

There was some evidence that children in this year 1 cohort struggled with both identifying and inferring emotions. Children tended to select a general emotion, e.g. 'happy' instead of more complex emotions stated or implied in the text, such as 'worried' or 'angry'. This may be because children were unfamiliar with the emotion vocabulary used and therefore selected 'happy' as a common and familiar emotion. It is also possible that when a particular emotion was implied through actions, children struggled to consolidate this whilst holding the rest of the text in their working memory.

Potential implications for practice

Suggestions for practice will depend on the different reasons behind children's difficulties with emotion inference but could be supported through:

- teaching which focuses on emotional literacy, such as building emotion vocabulary and actions associated with emotions
- developing children's working memory
- integrating social and emotional skills across different subjects – more information can be found in EEF's guidance on [Improving Social and Emotional Learning in Primary Schools](#).



Children may benefit from support integrating information when listening to stories.

In 2021, there was also some evidence that children found it difficult to integrate information from different parts of the text. For example, when the answer to a question required children to consolidate details that were not explicitly linked. This is a skill that is made more challenging in aural comprehension, due to the demands on children's developing working memory. However, integrating information from across a text during comprehension is an important skill as children listen to and begin to read longer texts.

Potential implications for practice

Listening comprehension activities are particularly important as they support the development of comprehension skills in children who are not yet fluent in decoding. Recommendations from EEF's [Improving Literacy in KS1](#) guidance suggest that these activities could include:

- high quality adult-child interactions which scaffold and extend children's speaking and listening skills
- modelling comprehension practices which support and develop children's thinking during shared or guided reading sessions.

Reading – Year 1

Sentence comprehension

The second section of the assessment focussed on children’s sentence level reading comprehension skills. When compared to 2019, children in 2021 showed lower attainment on this section and this gap was larger than in the aural comprehension section, perhaps due to the demand that this section places on children’s independent decoding skills. As with aural comprehension, the gap between boys’ and girls’ performance widened from 2019 to 2021 on sentence comprehension, with boys showing a greater drop in attainment. This section also showed the largest gap between children from disadvantaged backgrounds and their peers, suggesting that this may be an area in which they struggled.

The sentence comprehension questions were divided into three types which required children to read a whole sentence and match a corresponding picture, fill a gap in a sentence with an appropriate picture or fill a gap in a sentence with an appropriate word. As in 2019, children in 2021 found the first type of question the easiest, possibly because a whole sentence is provided, requiring less inference to understand. Children particularly struggled when they had to complete a gap in a sentence with a word, perhaps due to the additional reading demand. Two themes were found from children’s responses in 2021.



Children found understanding multiple parts of a sentence challenging.

For questions where children had to match sentences with their representative images, there was evidence that children had struggled to fully understand a sentence with multiple key elements. For example, if a sentence included an activity and a location, children commonly selected options that showed either the activity or the location instead of both. This may suggest that children are not reading the whole sentence before selecting their answer or that they are struggling to retain all parts of the sentence in their working memory for comprehension. There was some evidence that children were more likely to make this type of error in 2021 than in 2019.

Potential implications for practice

Developing children’s decoding, reading fluency or working memory may support children’s understanding of sentences with multiple parts. Teaching could include:

- on-going targeted sessions of systematic phonics and high-frequency words
- activities to develop reading fluency, e.g. paired reading with peer feedback so children can check each other’s understanding.



Comprehension monitoring proved challenging for some children.

Where children had to fill a gap in a sentence by selecting an appropriate picture, they were required to not only read the sentence but to monitor their comprehension of the sentence substituting in their answer. These questions proved challenging, particularly when the gap in the sentence was not at the end. There was evidence that children answered based on the first part of the sentence and did not adapt their understanding based on what they later read. In other cases, children relied on their extrinsic knowledge rather than information provided in the sentence or answered based on the last words they had read.

Potential implications for practice

The ability to monitor understanding as they read is an important skill related to how children regulate their learning and develop their metacognitive skills. This could be developed through:

- modelling strategies to develop comprehension, e.g. story mapping
- explicitly teaching metacognitive and organisation strategies – more information can be found in EEF’s guidance on [Metacognition and Self-regulated Learning](#).

Reading – Year 1

Text comprehension

Two sections require children to read a text and answer questions, the third section in paper 1 is teacher-supported with gradually reducing scaffolding and paper 2 is read independently by the child. Paper 1 is sat by all pupils whilst paper 2 is for children who are working at or above the expected level for year 1. Both sections challenge children's reading fluency, their working memory and their ability to follow a text or narrative.

Both year 1 cohorts found sections requiring reading comprehension of full texts the most challenging parts of the assessments, although children in 2021 found these areas more difficult than their counterparts in 2019. Both cohorts found independent comprehension more challenging than teacher-supported comprehension, however children in 2021 found independent comprehension comparatively harder. This may suggest that children working at the expected level for year 1 have been just as affected as children at the earliest stages of learning to read. Although boys performed lower than girls on whole text reading comprehension in 2021, this gap has remained stable since 2019, unlike the gap on the aural and sentence level comprehension sections. Children's responses from 2021 indicated two patterns.



Children may need support with writing skills and locating answers in the text.

In 2021, some children gave written responses where some letters were clear but there were either not enough to make the answer comprehensible, or the response did not make sense. This may be related to difficulties with letter formation, transcription, low confidence or children's self-regulation when planning, monitoring and writing responses. Some other children copied out the question showing they are able to form letters, but may struggle with the content of their answer or associated reading skills. Other responses showed that some children may not have located their answers in the text, instead using their own experience or the illustrations.

Potential implications for practice

Suggestions for practice depend on the underlying reasons for children's difficulties with written responses, but could include:

- supporting fine motor, letter formation and transcription skills, such as 'finger spaces' between words and pencil grip
- modelling metacognitive strategies which support children in answering a question to planning their response and writing it – more information on both of these points can be found in recommendations 5 and 6 of EEF's guidance on [Improving Literacy in KS1](#).



Children may need help to understand key concepts in fiction texts, particularly those which are abstract.

In 2021, evidence suggested that children may have struggled to understand key concepts in the fiction text, perhaps because they were abstract and could not happen in 'real-life'. Analysis of responses showed that children took the most prominent idea in the text, 'a character building something', and seemed to over-apply it to other characters and future events, despite it not being relevant to those questions.

Potential implications for practice

Children's understanding of key concepts in stories could be linked with teaching which develops children's social and emotional skills. Activities could include:

- exploring a rich and broad range of texts to develop children's familiarity with abstract story plots, different genres and conventions, relationships and decision making
- role play of key events with children or puppets
- story mapping may support children's understanding of how a key event develops through a story.



Children's ability to add and subtract numbers with visual aids is mostly secure; however they need practice bridging tens and with unconventional problems.

For both addition and subtraction children performed reasonably well, although there were areas in both that children struggled with in 2021. Children were most likely to perform nearly as well as children in 2019 where there were visual aids, such as objects that could be counted or crossed out, or for addition where the sum was less than 10. Addition and subtraction was one of the areas where the difference in performance between children from disadvantaged backgrounds and their peers was greatest, including where a number line was given for support.

However, when presented with addition or subtraction word problems where the numbers bridged ten, children in 2021 struggled compared to 2019 even when provided with visual aids. When required to identify the operation and the final answer for a word problem, more children identified the correct operation than the final answer, suggesting that children could interpret the problem but struggled with the addition. This was also shown with other subtraction and addition word problems even when children drew additional objects, with common errors including being one off the correct solution, suggesting miscounting.

In both 2021 and 2019, children found unconventional addition and subtraction problems more challenging than word problems, however children in 2021 found some of these comparatively more difficult. For example when faced with a missing number addition calculation where the missing number was 0, the difference between children in 2021 and 2019 was stark. The common error was to add the two numbers, instead of subtracting, suggesting that children were unsure about what they were required to do. Children in 2021 also struggled with subtraction questions where the answer was 0, even when a number line was provided. In contrast, for other missing number problems children in 2021 performed as well as children in 2019. This may suggest a specific area of difficulty with addition and subtraction problems where the answer is 0.

One of the most challenging questions children faced was identifying two numbers that totalled a specific number from a list of multiple choice options. Children greatly struggled with this and did not do as well as children in 2019, with their varied responses suggesting that children were unsure what to do, likely due to the unfamiliar way the problem was presented.

Although most children did not use any strategy, the most common strategy used for both addition and subtraction was engaging with the image through counting or crossing marks. The most common error was being one off the correct solution, suggesting that children sometimes miscounted.

Potential implications for practice

To support children's ability to complete subtraction and addition calculations involving bridging through 10 and problems presented in unconventional ways, activities could include:

- using objects, number lines and images to bridge through number bonds to 10 and 20
- providing opportunities for children to create their own number lines and strategies, such as marks, when solving problems

- representing addition and subtraction problems concretely, using practical resources such as counters and cubes so children can observe the effects of manipulating these, specifically when they are adding or subtracting 0 – more information can be found in EEF's guidance on [Improving Mathematics in the Early Years and Key Stage 1](#).



Children need support to develop their understanding of multiplication and division.

Although multiplication and division were topics that children struggled with in 2019, children in 2021 found these areas comparatively difficult, even though all questions were presented with visual aids. For both multiplication and division questions, the most common error was giving one of the numbers in the problem as a final answer, suggesting that children found it difficult to interpret the question. Children were more likely to give a correct solution to a multiplication problem if they were using numbers that were in the 2 times table than the 5 times table, suggesting they are more secure with counting in 2s. Although children were unlikely to use a strategy, they were more likely to use grouping with images for multiplication than division. For questions that required more interpretation of the problem, children were far more likely to use an incorrect operation, for example adding instead of multiplying.

Potential implications for practice

To support children's understanding of multiplication and division, teaching could include:

- counting in steps of 2, 5 and 10 through chanting and games in regular, short bursts
- practical activities involving sharing and grouping, including in cross curricular activities as well as classroom routines, reinforcing key language to develop the concepts of multiplication and division
- story-telling and role-play to illustrate multiplication and division in context, providing opportunities for children to use mathematical language
- providing opportunities for children to represent problems in their own ways, for example using images or marks – more information can be found in EEF's guidance on [Improving Mathematics in the Early Years and KS1](#).



Children need support with recognising a quarter of a shape and finding fractions of a quantity.

Children's ability to recognise fractions of a shape was similar to children in 2019, however they found working out a fraction of a quantity harder and were far more likely to omit the question. When finding fractions of a shape, children showed confidence finding half of a shape and although they found it more difficult to find a shape that had been split into quarters they performed as well as children in 2019. However, when finding half of a group of objects, which was supported visually, children in 2021 struggled. The most common error was giving a response that was the number given in the question suggesting that children did not know what to do and most children did not engage with the image.

Potential implications for practice

Teaching to support children's emerging understanding of fractions of a quantity and quarters could include:

- reinforcing key qualities of fractions, using language such as '1 of 2 equal parts'
- opportunities for children to show half of objects or quantities practically in real life contexts e.g. through food
- activities, including through play, that challenge misconceptions and support high quality interactions for children to discuss fractions of quantities and shapes.

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Children are secure in some areas of number recognition and counting; however some aspects may need strengthening.

Children in 2021 were secure in number recognition, counting forwards in steps of 1 and identifying one more or one less than a number, in line with children in 2019. However, although most children could identify a number on a number line with unmarked intervals, far more children in 2019 could do so. The common errors were being one off the correct response or the nearest marked interval, suggesting miscounting or not engaging with the unmarked intervals.

As in 2019, children were more confident in counting forwards in steps of 1 than backwards. However children in 2021 found counting in steps of 2 and 10 harder. The common error children made when counting in steps of 10 was confusing tens numbers with those ending in ‘teen’. When counting in steps of 2, the most common error was continuing in steps of 1. Children from disadvantaged backgrounds found this topic comparatively harder than their peers, particularly questions assessing number recognition, identifying one more or one less and counting in steps of 2 and 10.

Potential implications for practice

Children could be supported with these counting and number recognition skills through:

- practising counting in steps of 2, 5 and 10 through chanting and playing games in regular, short bursts throughout the school day, starting at different points and crossing through 100
- using role play, real life and cross curricular contexts to distinguish between ‘teen’ and ‘ty’ such as money and dates
- counting using number lines, with marked and unmarked intervals, and providing opportunities for children to create their own number lines.



Children are secure in most areas of measures; however they may benefit from support with telling the time and money recognition.

Children in 2021 performed nearly as well as children in 2019 with questions related to capacity and length but found questions on clocks and money recognition much more difficult. Although most children in 2021 could tell time to the hour on an analogue clock, only a small proportion could tell time to the half hour. For both questions, a common error was confusing the minute and hour hands. When telling time to the hour, some children selected the clock with both hands nearest to the hour numeral that they were required to identify.

Children in 2021 also struggled when recognising the value of coins. The most common error was not recognising that a pound coin was of greater value than a 20 pence coin. Some children interpreted a 10 pence coin as of higher value than a 20 pence coin, possibly relating the size of a coin to its value.

Potential implications for practice

To support children’s understanding of recognising the value of coins as well as identifying times on analogue clocks, teaching could include:

- using physical representations of coins to emphasise the value of coins, such as comparing cubes
- opportunities through role play to reinforce the value of units in distinguishing pounds and pennies
- children making own paper clocks which they can manipulate throughout the day to show time to the hour and half past related to real life events
- explicit discussion about the movement of the minute and hour hand for different times.