

# What impact does the implementation of structured 'knowing more, remembering more' strategies have on children's ability to do this?

Southwold Primary School, KS2 Phase

## Abstract

This study was designed to investigate the role of memory in education. It aimed to assess the effectiveness of methods to help pupils commit their learning to long-term memory for Key Stage 2 pupils. Linked to this, an explicit focus was on making links from prior knowledge and understanding new. In Ofsted's 2019 review, the importance of knowing more and remembering more is a core component of evaluation and now an integral part of their new framework. Each teacher included a memory based activity to the beginning of each of their humanities lessons for a six week unit of work. At the end of the focus period, each class were tested on retained knowledge through a quiz. Three target children from each class were chosen to provide data, these children were selected to ensure a cross section sample of ability range.

## Introduction

*'If nothing has altered in long-term memory, nothing has been learned'*, (Sweller et al, 2011). In cognitive psychology, learning has been identified as an adjustment in long-term memory, (Ofsted, 2019). If something is not remembered or has not changed an individual's overall understanding, it has not been learnt. This can take shape in many ways. Research suggests there is a significant relationship between the working memory and academic attainment, (Alloway and Alloway, 2010) and in education knowing that the working memory draws upon both the environment and long-term memory to process things is vital to shape our practice. However, the working memory can be overloaded so it is important to understand how the capacity of the working memory can be protected by adding to a pupils' prior knowledge.

In April 2018, Ofsted's National Director of Education, Sean Harford, posted the following on his blog: *'By progress, we mean pupils knowing more, remembering more. Has a child really gained the knowledge to understand the key concepts and ideas?'* To education practitioners, progress is the most important notion. Progress shows children are learning and teacher practices are effective, however it is also notoriously difficult to quantify or prove. Assessing memory gives teachers an approach to work by, one which can be utilised and applied in many different facets; formative and summative assessment. Arguably current assessment methods are not structured with memory in mind.

Southwold Primary School is part of a federation of schools. The Federation curriculum map is written by our internal curriculum specialists and has been specifically designed with a cyclical, layered approach in mind. This means that core and non-core content is built upon each year; knowledge and skills are repeated and become progressively more complex. To quote our curriculum intent: *'it allows children to rehearse, revisit and build on taught skills and make links, resulting in the learning 'sticking' with them as they continue their education.'* This means that there are already strategies in place to assist teachers and learners to commit their learning to long-term memory, from the structure of the curriculum, down to how the children assess their own learning.

As part of this approach children are asked to complete an 'end of unit evaluation' (*Appendix 1*), at the end of each term. This is familiar to them and as such, reduces response bias in this study. Children are asked their opinion on whether or not they perceive they have met curriculum intentions for each aspect of the humanities topic and are then required to apply the knowledge they have learnt to a previously unrehearsed context. This is engineered so the children must reflect on their learning from the entire topic and draw on any additional understanding they have, either from previous years or learning that has happened outside of formal education. This, in addition, encourages the pupils to make links across the curriculum and real-life contexts. These evaluations will be a key insight into the effectiveness of the implemented strategies.

## Research Process

This research project began with professional dialogue around the source of Ofsted's new framework (2019) and what 'knowing more, remembering more' looks like in classrooms on a day-to-day basis. Southwold Primary School was inspected by Ofsted in the summer of 2019 with an outstanding grading received, which meant that the practitioners were familiar with the review and how it is implemented in Ofsted's assessment framework. There was however an interest in further exploring how scaffolding children and committing learning to long-term memory could be achieved through consistent and explicit techniques as these still seemed new, ambiguous and difficult to identify. As a result of this consensus, the phase designed the following actions.

Within the teacher's planning and preparation for each Humanities lesson, a slide was added to the ActivInspire flipchart, the pupil-facing element of planning. This meant that teachers made time to discuss previous lessons, previous knowledge and any links to be made between what they've learnt and what they already know. There was no expectations on what this would look like, which meant that each teacher had ownership over how it was executed. This also allowed for flexibility around the content type. However, teachers were asked to record responses, as shown in fig. 1. In yellow, you can see the pupil feedback from the dialogue around existing knowledge. These conversations were always the first element of the Humanities lesson so the existing knowledge could be then built upon and referred to throughout.

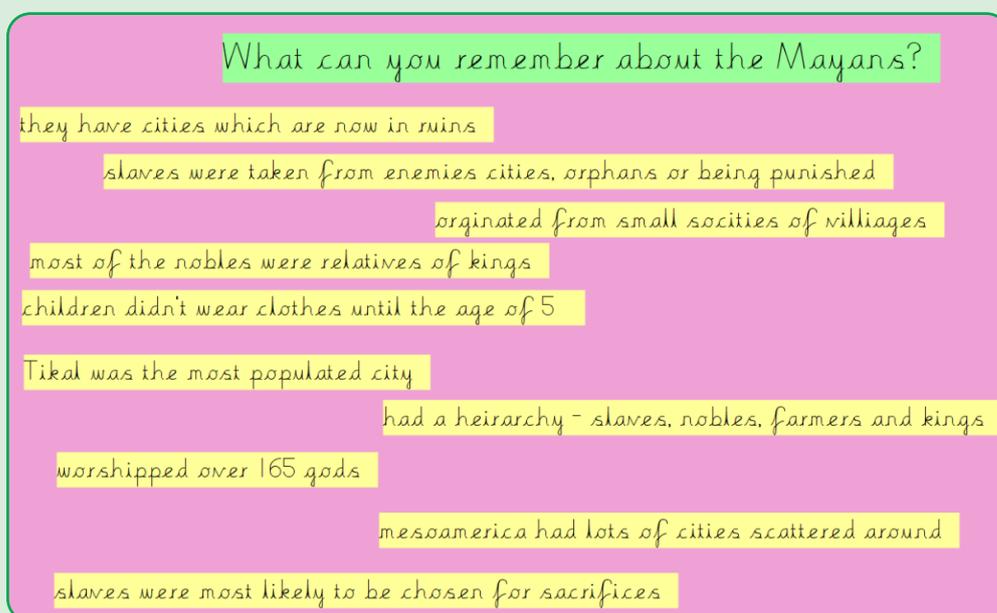


Fig 1. Example of pupil feedback from recap discussions

A continued focus for leaders in the teaching profession is how to improve the quality and efficiency of education being delivered to pupils, without adding to the workload of a class teacher. It is a multi-faceted job and new implementations, if not delivered well and consistently have no impact - the same applies if they are not fully supported by the staff delivering. This was taken into consideration when devising the strategy being implemented.

Ordinarily, this research process would span a full term in order to embed a new implementation thoroughly. However, due to school partial closures, the duration was only one half term. This however, still gave one set of complete data. Due to the nature of the research project, it could not be used half way through a humanities topic. Ideally, there would be two sets of data for two different humanities topics.

Unfortunately this research project did not lend itself to high quality quantifiable data due to the tricky nature of testing long-term memory and application of learning. However, the quality of the end of unit evaluation responses (appendix 1) were compared to that of Spring 2, where the strategies were absent. To narrow down the data and ensure an inclusive representation of each class, each teacher chose three target children one of each low, middle and high ability, whose responses were assessed in depth.

To analyse the end of unit evaluation responses a success criteria was used (fig. 2) and a traffic light system. The first of which checks the child's memory of terms, the next assesses the writing for their understanding has altered their memory by studying how their learning has fit into their mental map.

In addition to this, the children also completed a simple quiz to test their knowledge. They completed this after they had completed the topic and after a week's half term. The quiz had six questions, each relating to the six lessons they were taught. The quiz was created on Google Forms and shared with the students via Google Classroom, this allowed for quick data collection and analysis.

## Findings

The initial and arguably most important findings was the feedback received from the class teachers. A key advantage to the implementation was how enjoyable the reflective dialogue was around the pupils learning. All teachers agreed that it was a positive way to begin a lesson and allowed children to get into the right frame of mind for each humanities lesson. Although this is not a quantifiable result, it is extremely valuable feedback in an education setting. Teachers also noted that it was an effective, formative assessment tool, which informed how all adults in the classroom then supported the cohort.

Following this, the study of the end of unit evaluations written by the sample children followed a similar positive trend. Again, although this is not the most precise form of evaluation for the research question, it is a good method of assessing a child's deeper level of understanding. Children applying their knowledge in a written outcome demonstrates this depth of understanding, (Bloom, 1956). Across all classes the quality of responses were high. Using the success criteria (fig. 2) however, narrowed down the ability to assess the responses in a way which fitted the research question. Appendix 3 shows that the impact of implementing structured 'knowing more, remembering more' strategies improves pupil's ability to commit learning to long-term memory.

Success criteria Year 4 (E)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Yellow	Green	Green
I can apply my learning to other contexts	Green	Yellow	Green

Fig. 2. Example of research assessment of pupils' End of Unit Evaluations

A key pattern which emerged was the difficulty to identify children making links to other areas of learning, as this was where the majority of the amber emerged. The reason behind this is difficult to pinpoint as it not being included in this piece of writing does not mean that the child has not in fact done it mentally.

Next, is the Google Forms quiz (fig. 3), which was an easier way to assess numerical data. However, it is important to acknowledge that the questions ability to represent the topic learning in a multiple choice method is limited.

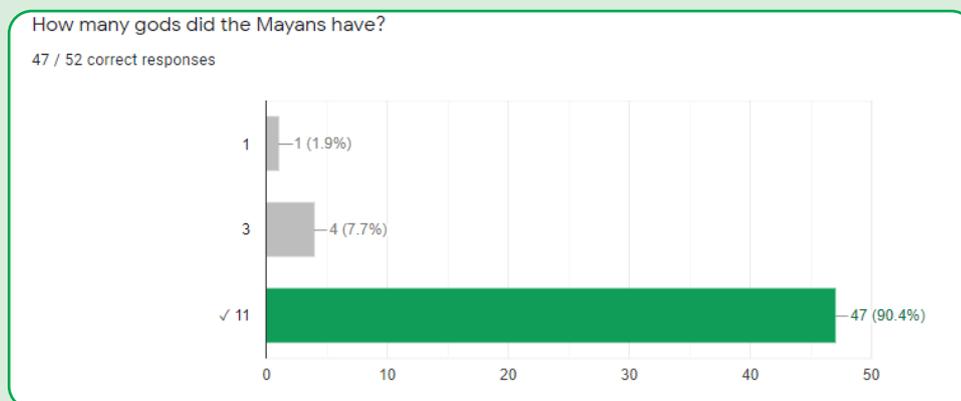


Fig. 3. Example of results from question

Once all year groups had completed the quiz, the data was collated into a table so that the percentage of correct answers were comparable, fig 4. In every year group, over 50% of pupils that took the quiz got each question correct.

	Number of children	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6
Year 3	43	90.60%	96.30%	98.10%	85.30%	90.60%	50.50%
Year 4	46	90.20%	96.10%	86.70%	85.20%	91.40%	97.70%
Year 5	54	92.60%	90.60%	90.40%	77.80%	57.70%	51.90%
Year 6	51	95.10%	89%	90.80%	54.30%	68.90%	51.10%

Figure 4. Table showing % of correct answers for individual questions in each year group.

These results show a continuation of a positive trend. It shows only 11 out of 24 questions across all year groups getting under 90%. These results are ultimately attributed to the quality of teaching and planning of each topic, however the tests were taken following a week’s half term break which demonstrates the children’s memory of the information tested.

## Conclusion

In conclusion, the data supports the effectiveness of implementing specific ‘Knowing more, remembering more’ strategies to assist a child’s working memory and therefore commit learning to long-term memory. As previously discussed, these factors are fundamentals for progress. In addition, the implementation has a changing effect on how children approach their lesson, not as new but advancing the knowledge they already possess.

A key question that rose from the study was how in fact education practitioners can further adjust their practice to best impact long-term memory consciously. It is important that Key Stage Two continue to try different methods of drawing attention to the relationship between memory and academic attainment. Next steps would be creating a structured, pupil-facing format so it could be applied consistently and across the curriculum. This would need to be developed alongside class teachers to ensure it can be efficiently used and therefore have impact. In addition, it seems that there is room for class teachers to draw awareness to the importance of memory and what effects it with the children. For the pupils to know the science behind their learning could assist retention and revision, setting them up for their future in education.

## References

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## Appendices

### Appendix 1 Example of End of Unit Evaluations Summer 1

*Year 4 Humanities (Summer 1) end of topic review*

### The Victorians and the Industrial Revolution

**R= I have not shown this yet**      **A= I can show this with adult help**      **G= I can show this all on my own**

How well have I done?	Me	My <u>Teacher</u>
I can use Victorian artefacts to pose questions and place events in chronological order		
I can understand how the Industrial Revolution changed towns and cities		
I can explore inventions that contributed to the growth of cities		
I can explore the role of working children		
I understand how the work of individuals changed aspects of society		
I understand how schooling developed during the Victorian era		

**What was the life of a Victorian child like?**



*Year 3 Humanities (Summer 1) end of topic review*

### Ancient Egyptians

**R= I have not shown this yet**      **A= I can show this with adult help**      **G= I can show this all on my own**

How well have I done?	Me	My <u>Teacher</u>
I can investigate Ancient Egyptian artefacts and place events in chronological order		
I can explain the importance of gods to the Ancient Egyptians		
I understand how Ancient Egyptian pharaohs show their power		
I understand and explain how the Egyptians viewed death.		
I understand life in Ancient Egypt.		

**What would you include about Ancient Egypt in a museum and Why?**

## Appendix 2 Example Google quiz given to children at the end of the unit.

What did the Mayans believe humans were sculpted from?

- Trees
- Earth
- Fire

What is the Mayan 'Wonder of the World'?

- The Pyramids
- The hanging Gardens of Babylon
- Chichen Itza

How did the Mayans live?

- Peacefully
- They invaded new lands
- They didn't exist

### Year 5 Mayans

What do you remember?

What did the Mayans invent?

- Carpentry
- Chocolate
- Transport

Where was the Mayan civilization based?

- American
- Mexico
- Guatemala

How many gods did the Mayans have?

- 1
- 3
- 11

## Appendix 3 Results for quality of end of unit evaluations

Success criteria Year 6 (K)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary fluently.	Green	Green	Green
I can make links to other areas of learning.	Yellow	Yellow	Green
I can apply my learning to other contexts.	Green	Green	Green
Success criteria Year 6 (H)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Green	Green	Green
I can apply my learning to other contexts	Green	Green	Green
Success criteria Year 5 (O)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Red	Yellow	Green
I can apply my learning to other contexts	Green	Green	Green
Success criteria Year 5 (M)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Red	Green	Green
I can make links to other areas of learning.	Yellow	Yellow	Yellow
I can apply my learning to other contexts	Yellow	Green	Green
Success criteria Year 4 (S)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Yellow	Yellow	Green
I can make links to other areas of learning.	Green	Yellow	Green
I can apply my learning to other contexts	Green	Green	Green
Success criteria Year 4 (E)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Yellow	Green	Green
I can apply my learning to other contexts	Green	Yellow	Green
Success criteria Year 3 (S)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Yellow	Yellow	Yellow
I can apply my learning to other contexts	Yellow	Green	Green
Success criteria Year 3 (K)	Child A (LA)	Child B (MA)	Child C (HA)
I can use technical vocabulary.	Green	Green	Green
I can make links to other areas of learning.	Yellow	Yellow	Yellow
I can apply my learning to other contexts	Red	Green	Green