

*Teaching and
learning model*

Mechanisms for effective learning
Version 1.0



Be the best you can be

OVERVIEW

While learning is hugely important, it is also vastly complex. As educators, the more we know about learning and how it works, the more likely we will be able to make it happen (Willingham, 2018). We recognise that without a firm grasp of the underlying mechanics of cognition, our practice will remain bounded by intuition, imitation and trial and error (McCrea, 2019). We also recognise that in order to be equipped for learning, pupils' emotional developmental needs must be met. The ALP teaching and learning model is built upon a set of guiding principles for teaching and learning. They align with what we know about attention, working memory, long term memory, cognitive load and retrieval. They also align with the Thrive approach.

The principles are:

1. Set out essential routines and expectations
2. Guide pupils to attend to learning through environment design and delivery
3. Enrich language and communication
4. Help pupils to encode information through session design and delivery
5. Plan with cognitive load theory in mind
6. Provoke and expose pupils' thinking
7. Help pupils to remember through practice and retrieval

Each principle has a set of mechanisms for effective learning. Mechanisms are features of teaching and provision that act as a catalyst for pupils to begin the process of learning. Utilising the mechanisms, as appropriate, will increase the likelihood of pupils making a permanent change in their long term memory.

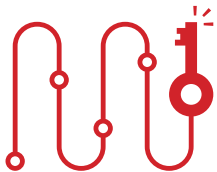
Each mechanism has a set of action steps and deliberate practice sessions, designed to help educators to enact the guiding principle.

SET OUT ESSENTIAL ROUTINES AND EXPECTATIONS

1

Why does this help pupils to learn?







Routines are the bedrock of a positive behaviour management system. If pupils know what to do, where to go, what to bring, how to respond and what happens in various situations, then it allows the focus to be on learning because the rest happens more or less automatically. Many aspects of school life happen at the same time every day, every lesson and lend themselves to being supported by clear routines. The key is to establish them and rehearse them so that they are known, understood and enacted consistently.




Key Learning point:

Whatever you establish and sustain becomes the norm— 'What you permit, you promote.'

Spotlight Mechanisms

-  Ensure pupils enter quickly and calmly
-  Gain pupils' attention quickly and calmly
-  Have clearly identifiable routines for transition points
-  Provide instructions and routines to create an illusion of pace
-  Notice, and discretely deal with off-task behaviour appropriately, resetting the class/group where needed
-  Issue a behaviour sanction inline with policy, where necessary

Recommended Reading

-  ALP Relationships Policy
-  Sherrington and Caviglioli (2020) Teaching Walkthrus 1
-  Sherrington and Caviglioli (2021) Teaching Walkthrus 2

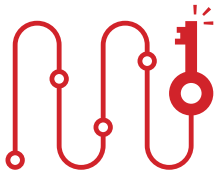


GUIDE PUPILS TO ATTEND TO LEARNING THROUGH ENVIRONMENT DESIGN AND DELIVERY

2

Why does this help pupils to learn?







People experience thousands of stimuli each moment, but they can only consciously attend to a handful. Educators must ensure that pupils focus on what is to be learned and overcome competing demands on their attention.

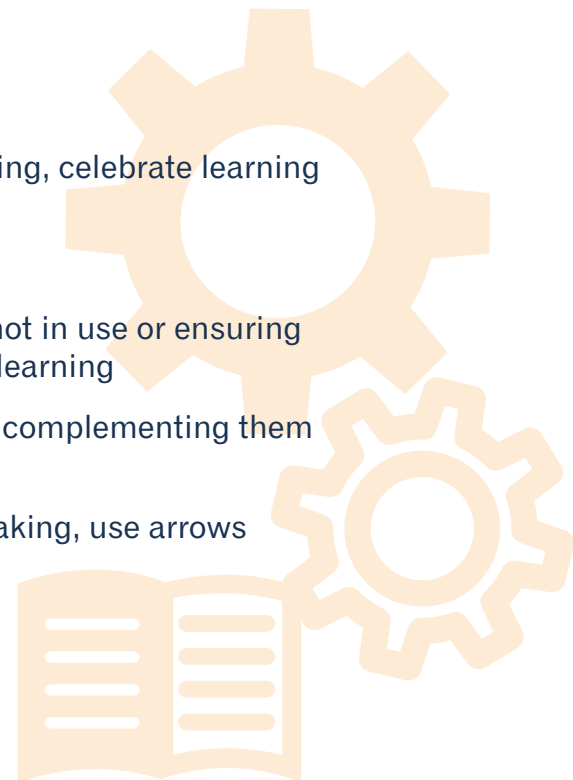


Key Learning point:




If educators do not explicitly draw pupils' attention to what it is to be learned, there is a risk they will be distracted by something else.

Spotlight Mechanisms

-  Ensure displays have a clear purpose; to support learning, celebrate learning or document learning and are not overstimulating
-  Limit superfluous classroom decorations
-  Limit external noise by switching off projectors when not in use or ensuring speaking by peers and other adults does not interrupt learning
-  Limit expositional text on slides: use visuals on slides, complementing them with spoke description
-  Signal key points, for example stress key words in speaking, use arrows or pointing with images or text
-  Consider the placement of clocks



Recommended Reading

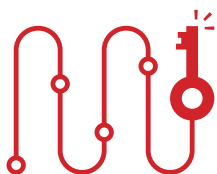
-  Mayer, R (2008) Applying the Science of Learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, 63 (8), pp.760 -759
-  McCrea, P (2017) Memorable Teaching
-  Fisher et al (2014) Visual Environment, Attention Allocation, and Learning in Young Children: When Too Much of a Good Thing May Be Bad. *Psychological Science* 014, Vol. 25(7) 1362– 1370

ENRICH LANGUAGE AND COMMUNICATION

3

Why does this help pupils to learn?





Pupils learn best from back and forth conversations and from hearing lots of different words. In order for pupils to become fluent in the use of general vocabulary and subject specific terminology, the process of learning new words needs to be considered deliberately and explicitly as part of teacher instruction. Pupils with the weakest prior knowledge and most limited vocabulary will find this the most difficult; new words do not just 'sink in' and, in the absence of deliberate practice, are likely to be forgotten all too easily.






Key Learning point:

Pupils with low vocabulary at age 5 are 50% more likely to have mental health difficulties at age 34 and are twice as likely to be unemployed.

Spotlight Mechanisms

-  Model social interaction and turn-taking alongside play scenarios
-  Develop sustained shared thinking through adult-child interaction
-  Plan for deliberate vocabulary development
-  Generate improved responses through Say It Again, Better

Recommended Reading

-  Department for Education, Roulson S et al (2011), Investigating the role of language in children's early educational outcomes, accessed 16th January 2018, <https://tinyurl.com/y24gfdq5>
-  Beck, I, L. et al (2013) Bringing Words to Life: Robust Vocabulary Instruction
-  Quigley, A (2018) Closing the vocabulary gap

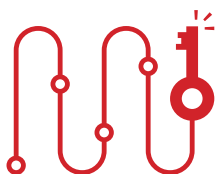


HELP PUPILS TO ENCODE INFORMATION THROUGH SESSION DESIGN AND DELIVERY

4

Why does this help pupils to learn?






In order to form secure schema, pupils need to assimilate new learning connecting it to what they already know. This is constrained by the extent of their prior knowledge and the inherent limitations of working memory: We can't deal with too many ideas at once. Many areas of learning are built around a logical set of ideas or steps that build on each other or follow a sequence. This could be components of writing, mathematical operations, a dance, making food, or understanding a historical event. The more confident and knowledgeable pupils are, the bigger these steps can be.



Key Learning point:

Pupils can only make sense of new information, appreciate its meaning and commit it to memory, on the basis of, and by connecting it with, what they already know.

Spotlight Mechanisms

-  Deliver learning intentions which link to the sequence of learning — are measurable and shared with clarity
-  Chunk ideas — identify steps needed for strong schema building
-  Pre-empt possible misconceptions
-  Teach the critical vocabulary or ideas first
-  Sequence learning and bridge gaps effectively

Recommended Reading

-  Willingham, D. (2006) How Knowledge Helps. American Educator. Spring

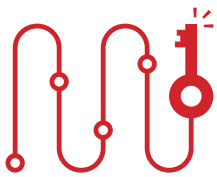


PLAN WITH COGNITIVE LOAD THEORY IN MIND

5

Why does this help pupils to learn?





Working memory (WM) – the focus of conscious thinking – has limited capacity. Educators must ensure pupils focus on a few chunks (ideas, processes or pieces of information) at a time. While individual pupils' WM capacity differs, there is no known way to increase working memory capacity; however, gaining knowledge and practising helps pupils commit learning to long-term memory (LTM): this reduces the need for pupils to rely on their WM. Pupils transfer information into their LTM when they think hard about its meaning. Educators must encourage pupils to think hard about the meaning of what is to be learned.





Key Learning point:

If educators ask pupils to work with too many ideas at once, their WM will be overloaded as processing in WM is necessary, but not sufficient, for long-term storage. This severely restricts pupils' ability to comprehend these ideas or to learn from the experience. While processing in MW is essential for remembering, the kind of processing – deep and meaningful – is equally important. Thinking about meaning and connecting new concepts to existing information helps get material into memory better than thinking about other aspects of the content.

Spotlight Mechanisms

-  Check for understanding during independent work
-  Provide scaffolds to limit load on WM
-  Design practice tasks to enable pupils to practise their learning
-  Build in reflection time to enable pupils to reflect their learning back to others, improving retention of knowledge

Recommended Reading

-  Willingham, D. (2008) What will improve a Student's Memory? American Education. Winter
-  Centre for Education Statistics and Evaluation (2017) CLT in Practice: NSW

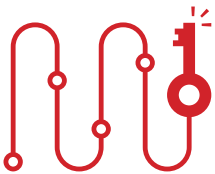


PROVOKE AND EXPOSE PUPILS' THINKING

6

Why does this help pupils to learn?





Educators can help pupils to apply their knowledge by encouraging them to make links between ideas. Educators can also help pupils by showing them how knowledge is organised; highlighting the underlying principles between key ideas. Pupils may hold misconceptions already or form new ones as they learn: if they maintain these misconceptions, this is what they are likely to recall. Educators need to identify what pupils are thinking and have understood during the lesson, without waiting for misconceptions to emerge. Pupils' knowledge of a concept extends and deepens when they practise it in new situations and contexts. Organisation and practice build a mental model or schema, which makes the concept useful to pupils. This also supports pupils to transfer learning to new contexts and to think critically about what they know.





Key Learning point:

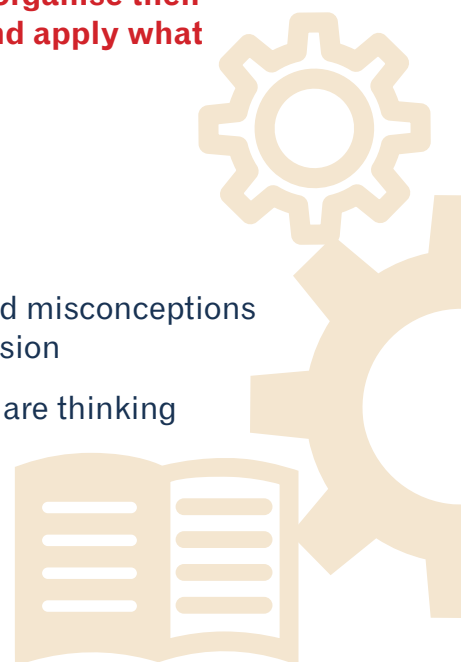
If pupils develop misconceptions of which educators are unaware, they will struggle with key aspects of future topics. Our knowledge is not isolated, but organised. This organisation makes knowledge usable. Educators must offer pupils structures to organise their knowledge if they are going to be able to recall and apply what they know.

Spotlight Mechanisms

-  Design opportunities to provoke interest, curiosity and thought
-  Use hinge questions, multiple-choice questions designed around misconceptions which show rapidly what pupils have understood during the session
-  Use Think, Pair, Share followed by Cold Call to ensure all pupils are thinking hard by peers and other adults does not interrupt learning
-  Use No Opt Out to increase engagement and participation

Recommended Reading

-  Willingham, D. (2008) What will improve a Student's Memory? American Education. Winter
-  Centre for Education Statistics and Evaluation (2017) CLT in Practice: NSW

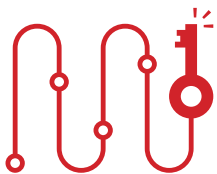


HELP PUPILS TO REMEMBER THROUGH PRACTICE AND RETRIEVAL

7

Why does this help pupils to learn?







Learning is a persistent change in LTM not just a temporary increase in pupil performance. Introducing pupils to an idea once is very unlikely to be enough for them to recall it after a month, a year, or beyond. Educators can make pupils' knowledge more secure by giving them practice in using and retrieving this information once pupils' memories are beginning to fade. Practice increases recall, particularly if it is spaced (there is a delay between practice episodes) and mixed (pupils practice different tasks, rather than one at a time). The gaps between practice should be varied to increase the number of stimuli which helps pupils remember the item and the usefulness of the information.






Key Learning point:

The more pupils' knowledge develops, the more this frees their WM to process new ideas.

Spotlight Mechanisms

-  Check pupils' prior knowledge at the start of a unit or lesson through the use of the ALP retrieval grid and adapt teaching to address gaps
-  Offer pupils guided practice initially, practicing together (e.g. checking the answers after each question in maths, choral repetition in phonics) before moving to independent practice (I do, we do, you do)
-  Plan when and how to return to key concepts; revisit questions sooner if they are answered incorrectly and delay revisiting them if they are answered correctly
-  Use low-stakes quizzes to return to key ideas repeatedly
-  Increase the length of time between practice sessions, provided pupils continue to answer successfully
-  Make practice increasingly challenging when pupils are successful: mix the kind of practice pupils are doing, for example, vary the questions or content, such as setting questions about addition, subtraction, multiplication and division, to promote greater through about the appropriate technique to use.

Recommended Reading

-  Willingham, D. (2004) Practice Makes Perfect– but Only if you Practice Beyond the Point of Perfection. American Educator. Spring
-  Jones, K. (2020) Retrieval Practice: Research and Resources for every classroom
-  <https://www.retrievalpractice.org/library>







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