

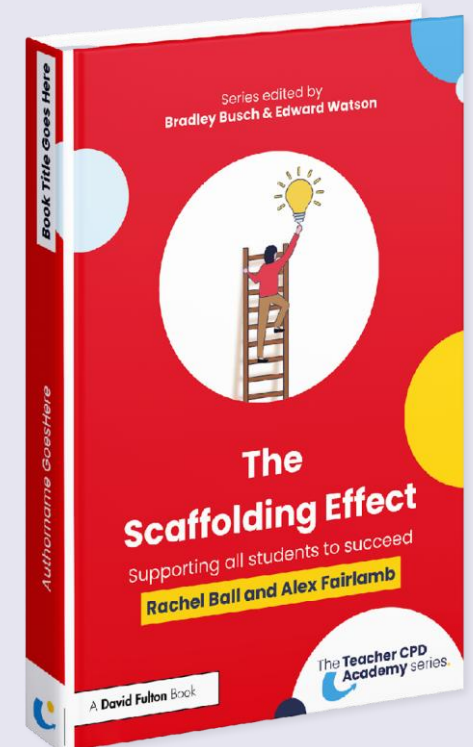
The Scaffolding Effect: How Cognitive Science Can Help Us To Support All Students

Rachel Ball

PD Specialist Steplab & Former Assistant Principal T&L,
SLE

Dr Alex Fairlamb

Trust T&L Coach and Director of Alex Fairlamb Consultancy,
SLE, FHA, FCCT



Aims

- Consider why scaffolding is essential for any teacher
- To refresh our understanding of how scaffolding sits within an Adaptive Teaching framework
- To consider 4 key practical scaffolding strategies



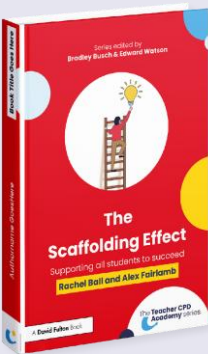
Common language

What is Adaptive Teaching?	What is Scaffolding?
Adaptive teaching refers to when teachers make changes to their instruction to meet the needs of all learners. Jade Pearce (2024) Micro adaptations – tier 1 instruction Macro adaptations – Person-specific adjustments e.g. particular type of pen for dyspraxia, increased font size for visual impairment	Scaffolding is a metaphor for temporary support that is removed when no longer required. It may be visual, verbal or written. SEN in Mainstream guidance report, Education Endowment Fund, 2020

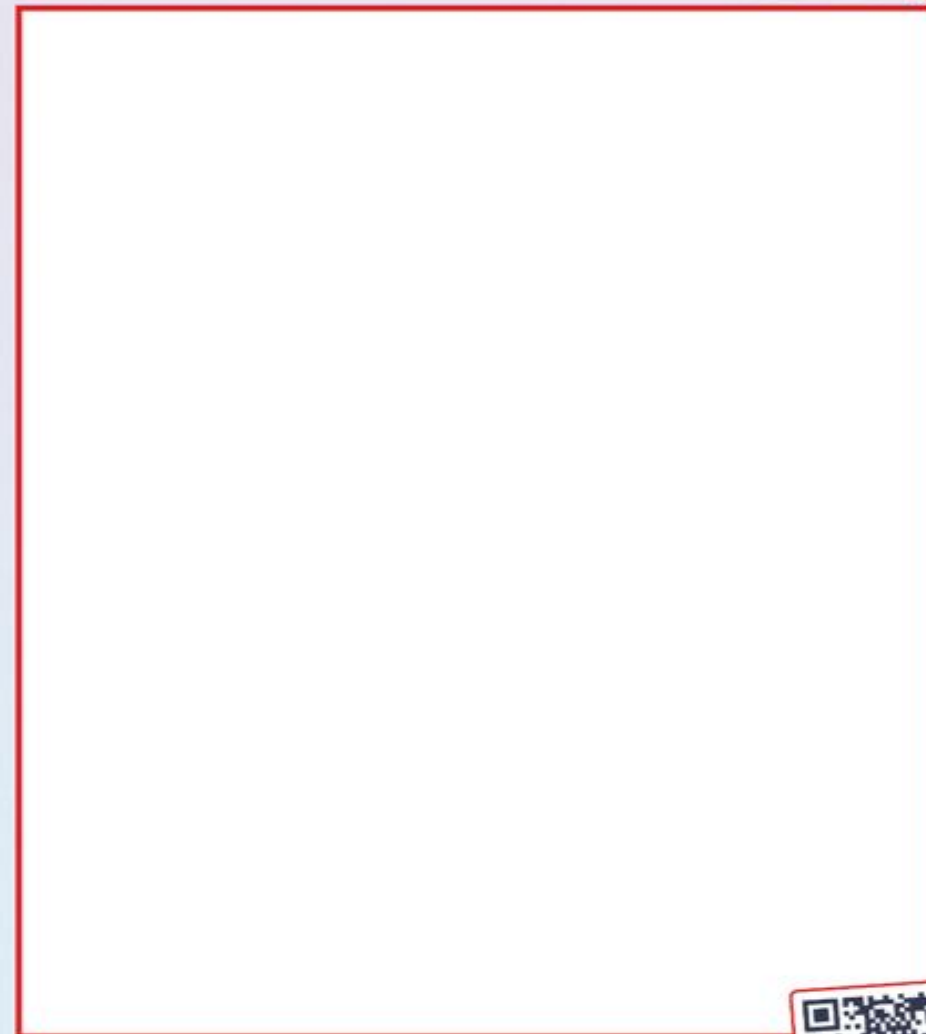


Do now

Draw this image
60 seconds



The Scaffolding Effect



innerdrive.co.uk

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The Scaffolding Effect



Why is thinking about this important?

“The best teachers are those who think hard about the pupil who struggles the most.

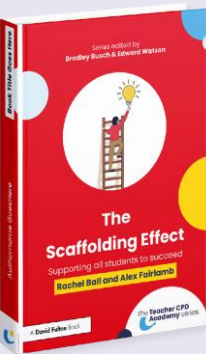
By doing this, the teacher significantly raises their game, considers barriers to learning and how to overcome them. Time and time again, this doesn't just help the pupil who struggles the most, it helps everyone.”



Andrew Young



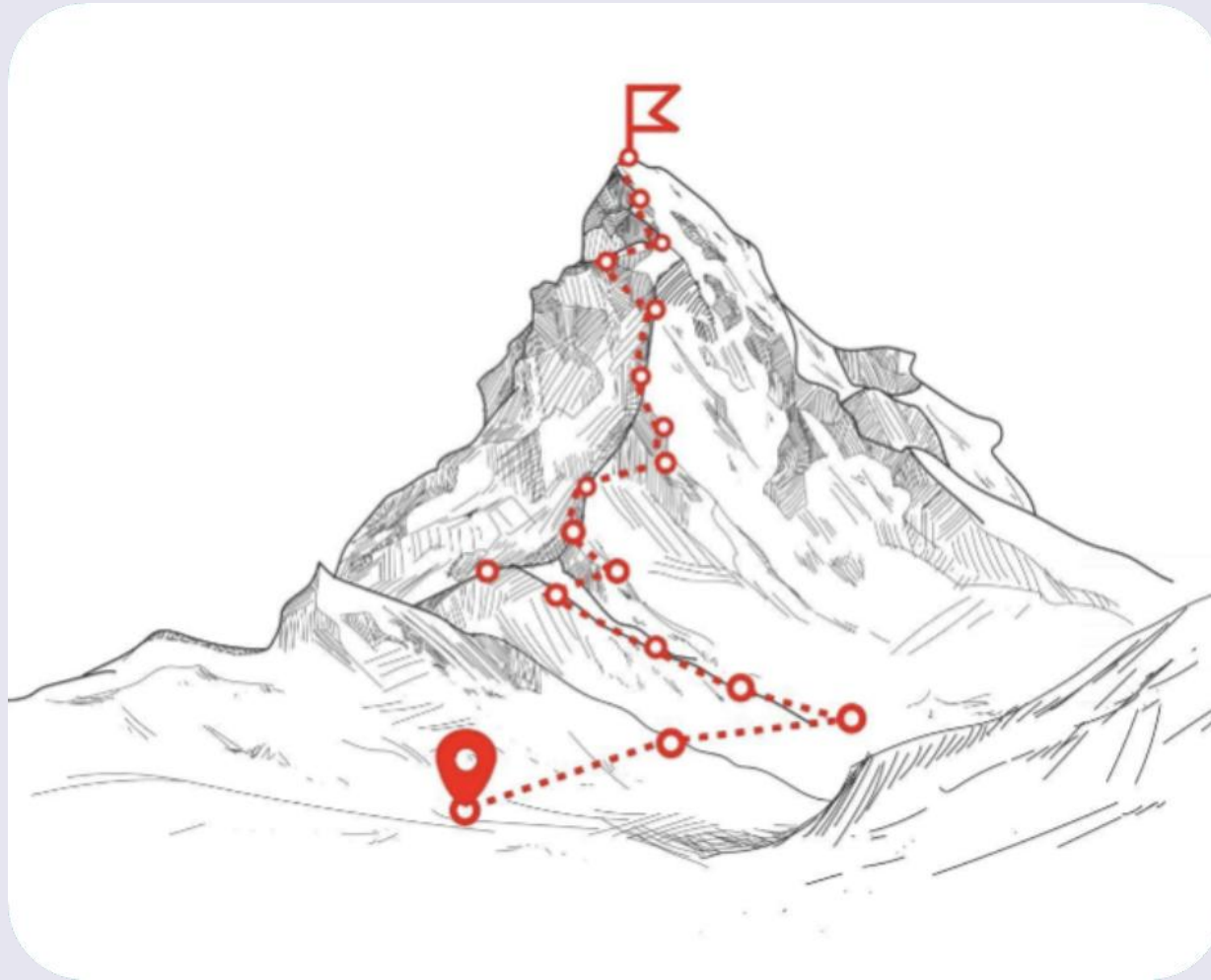
What is scaffolding?



Teacher expectations



The importance of challenge and high expectations for all

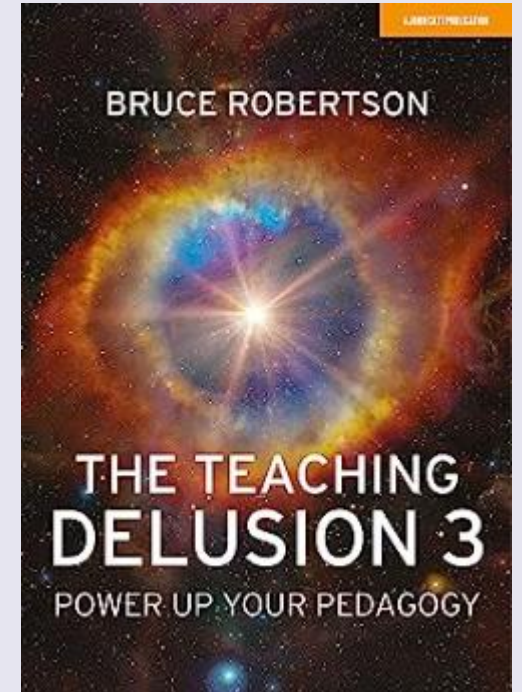


Social Justice

“We want ***all* students to learn *everything*** set out in our curriculum....

This is about social justice and inclusion.

It might take some longer than others, and some might need more support than others, but everyone should be aiming to learn this curriculum in full.”



What is scaffolding?

“A process that enables a child or novice to solve a task or achieve a goal that would be beyond his unassisted efforts.”

Bruner et al, 1976

“Scaffolding is a metaphor for temporary support that is removed when no longer required. It may be visual, verbal or written.”

SEN in Mainstream Guidance Report,
EEF, 2022



Scaffolding in practice

What can it look like in practice?

Visual



Visual scaffolds may support a pupil to know what equipment they need, the steps they need to take or what their work should look like.

For example:

- A task planner
- A list of the steps a pupil needs to take
- Model examples of work
- Images that support vocabulary learning



Verbal



Providing a verbal scaffold may involve reteaching a tricky concept to a group of pupils, or using questioning to identify and address any misconceptions.

- "Let's look at this together..."
- "What have you done before, that will help you with this task?"
- "Don't forget, your work needs to include..."

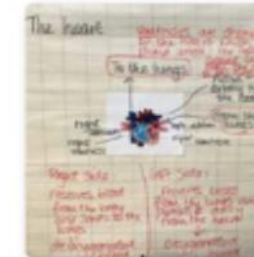


Written



A written scaffold will typically be provided for a pupil to support them with an independent written task. It could be the notes made on the whiteboard during class discussion; it could even be the child's own previous work used to support their recall.

- A word bank
- A writing frame
- Sentence starters



An approach to scaffolding

Before the lesson - **Anticipate**
barriers

Continuous loops

During the lesson - use
assessment to elicit
understanding



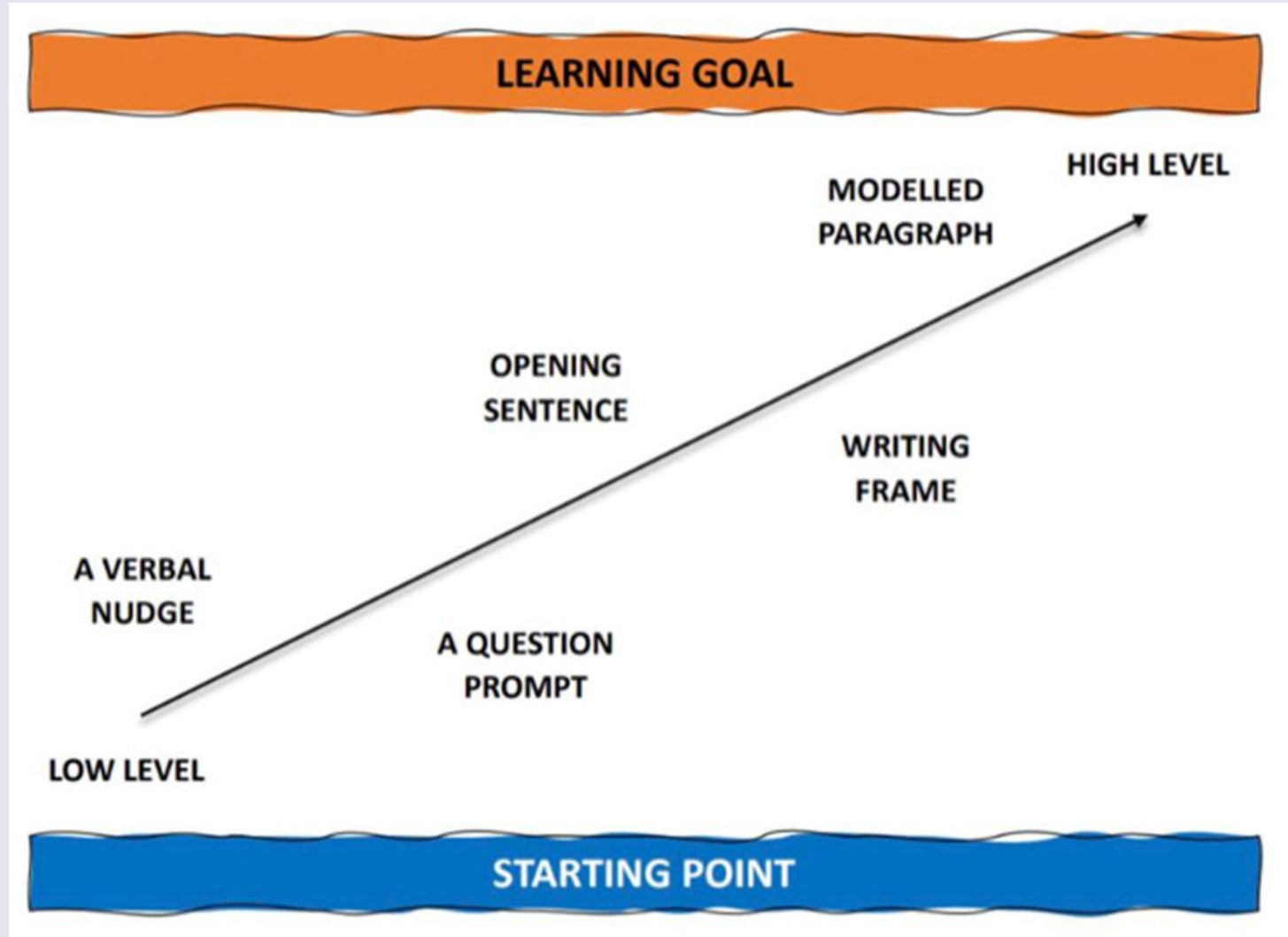
During the lesson - live
adaptations and
scaffolds



Jon Eaton, 2022



Gradual release – Heavy to light



Michael Chiles



Key Scaffolding Strategies



Modelling: I/We/You



Research

Cognitive Load Theory (Sweller, 2006):

Origins in the worked example effect.

Showing a completed worked example to novices supports their learning

I Do, We Do, You Do (Fisher and Frey, 2007):

builds on this by showing a completed example then gradually releasing responsibility to the learner as fluency and confidence develop

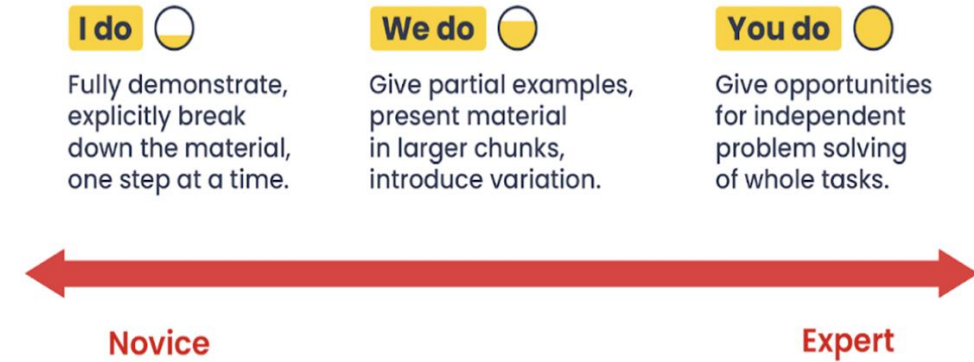
Renki et al, 2000

argue that worked examples are most useful early on but should gradually give way to partially completed examples and then independent problem solving

I do

“The model is a window into expert thought, not a template to be traced.”

Mark Enser



You'll notice I've started with X

Why do you think we have this vocabulary here?

I've moved to this position because...

I Do, We Do, You Do - Or Do We?

When good principles meet poor practice

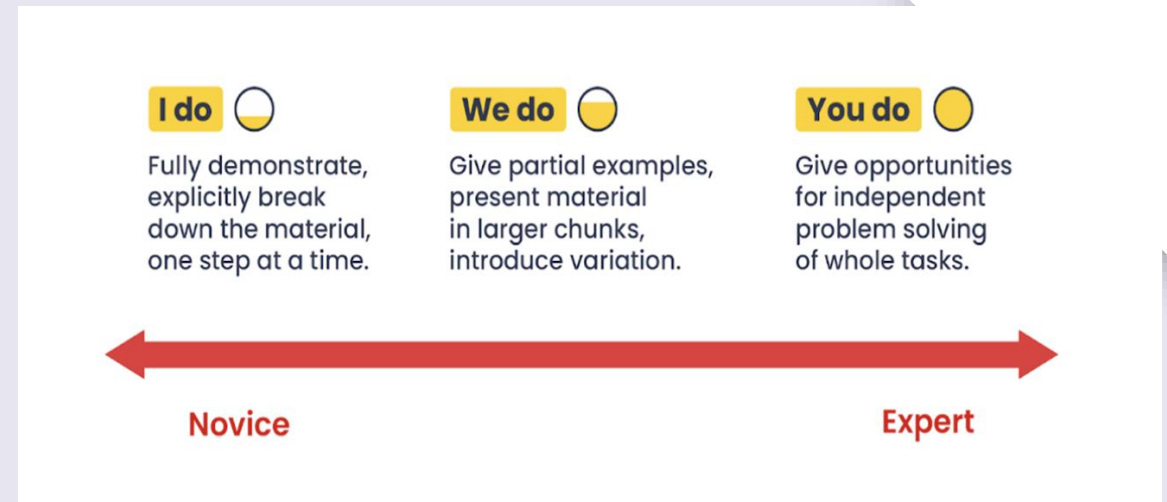


MARK ENSER
APR 27, 2026

We do

“...where gradual release either earns its place or collapses into theatre.”

Mark Enser



You do

“...now try this with what you know, and see where your thinking takes you”

Mark Enser

I do 

Fully demonstrate,
explicitly break
down the material,
one step at a time.

We do 

Give partial examples,
present material
in larger chunks,
introduce variation.

You do 

Give opportunities
for independent
problem solving
of whole tasks.



Novice

Expert

Application

World War One Medicine: Source Utility Practice

1. How useful are Sources A and B for an enquiry into the **work of the stretcher bearers** on the Western Front? (8 marks)

Source A: From a letter written by a captain in the Royal Army Medical Corps (RAMC) to his family in 1915. He was in charge of a group of stretcher bearers.

At 2 am a terrifying bombardment began and at 5 am the first batch of wounded began coming.

It was evening by the time I got out of the trench to look for more wounded. I went off with another man to search for the wounded. We found most of them in a wooded area, so weak that they could not call out. They were so relieved at being found that I led a search for more wounded.

It was awful work getting them out of the shell-holes. It was also hard to find enough men to carry them away because the stretcher bearers were so exhausted.

Source B: A painting called 'Stretcher Bearers of the RAMC Lifting a Wounded Man out of a Trench' by Gilbert Rogers. Rogers joined the RAMC and served on the Western Front. In 1918, he was commissioned to produce paintings for the Imperial War Museum.



Step 1: 'I' Worked Example

Read through my example I have written on the board, then highlight the 3 key sections

Source is useful as it tells us details on how stretcher bearers had to go out and find the wounded 'I led a search for more wounded', whilst it also tells us about the difficult conditions in transporting wounded "awful work getting them out". This is accurate as I know what stretcher bearers often had to go out into no mans land at night to collect the wounded, through sometimes waist deep mud. The nature of the source is useful as it gives us a personal insight into the work of a stretcher bearer, and as he was a 'captain' he would have had lots of experience due the battles in 1915, like Ypres. However, the source is limited as it's only one persons point of view and as this is a letter home, may have missed bits out to avoid sharing the worst.

- | | | |
|---|--|---|
| ☐ Content
Evidence from source | ☐ Own Knowledge
To support points | ☐ Provenance (Nature, Origin, Purpose)
How this might affect the sources utility |
|---|--|---|

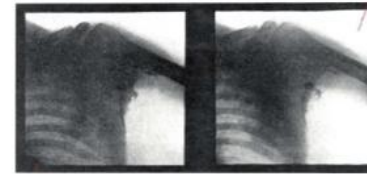
Step 2: 'We' Joint Construction

Lets collaboratively write an answer to Source B

Source B, a painting of stretcher bearers is useful as _____

2. How useful are Sources A and B for an enquiry into the **effectiveness of new medical techniques** on the Western Front? (8 Marks)

Source A: An x-ray taken in 1915 showing a bullet lodged in the armpit of a British soldier



Source B: Memories of John Hayward, who worked as a surgeon at a CCS near Amiens, July 1918. Memories are from the 1930 book 'Narratives of the war'

"Resus" was a dreadful place. Here were sent the shocked, collapsed and dying cases, not ready to have an operation but this may have been possible after warming them up under cradles in heated beds or the transfusion of blood. The effect of transfusion was in some cases miraculous. I have seen men already like corpses, pulseless without perceptible breathing but within two hours of transfusion, they were sitting up in bed smoking and exchanging jokes before they went into surgery.

Step 3: 'We' Completion Model 2

With the teacher and your neighbour, filling in the missing knowledge and provenance limitations

This source is useful as it shows an x rays image locating the exact position of a bullet in a wounded soldier. The photo highlights how successful the new x ray technology was, I know that _____

The purpose of the x ray to identify bullets, this **reinforces its usefulness** as it provides a clear example of the successes of x rays used to identify bullets in the body. However there are **limitations as the image is**. _____

Step 4: 'You' Independent Example

Independent complete Source B yourself: Remember C.O.P

- | | | |
|---|--|--|
| ☐ Content
Evidence from source | ☐ Own Knowledge
To support points | ☐ Provenance (Nature, Origin, Purpose)
How this might make affect the sources utility |
|---|--|--|

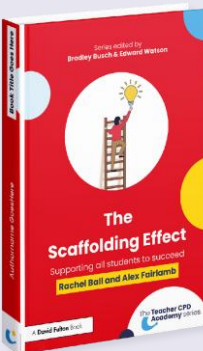
Application

Step 1: I Do – Worked example

Step 2: We Do – Joint construction

Step 3: We Do – Completion of model 2

Step 4: You Do – Independent example



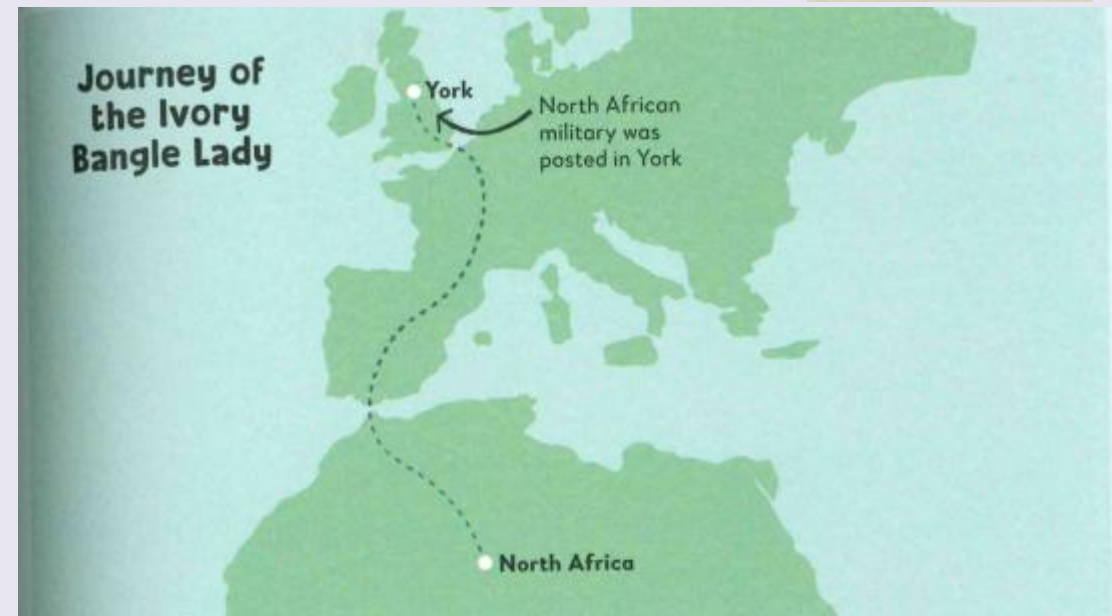
Ivory Bangle Lady

- It is likely she came with her family from north Africa to York, where North African armies were posted.
- Ivory Bangle Lady tells us that women and children must have migrated across the empire, as well as men.

What else can we find out about her from the source evidence?



Source A: An ivory bangle



(Taken from Migration Journeys Through Black British History, the Black Curriculum)

What does the evidence tell us?

We are going to look at five sources to find out about Ivory Bangle Lady.



When we are looking at the sources, consider what it tell us about:

- ☐ Her age
- ☐ Where she was born
- ☐ Why she was in Britain
- ☐ If she was rich (aristocracy) or poor (peasant)
- ☐ Her religious beliefs

Evidence A: Physical features

The **analysis** (looking in detail) of skeletons gives archaeologists an opportunity to identify the origin of skeletons by studying skull shape as well as **isotope** (a chemical element) and DNA signatures.

Ivory Bangle Lady's bones were very clean and her teeth were in very good condition. This suggests that she was quite young when she died. Chemical tests of her teeth shows that she may have grown up somewhere slightly warmer than Britain. The tests also show she ate food eaten by high status people, which suggests that she had a high social status.

The details of some bones in her skull suggest that one of her parents may have been from north Africa.



Let's look at the evidence to find out information (clues) about Ivory Bangle Lady

Evidence	What information does the evidence give us about Ivory Bangle Lady?
Evidence A: Physical features 	• _____ • _____

What does the evidence tell us?

Let's look at another source

When we are looking at the sources, consider what it tell us about:

- ☐ Her age
- ☐ Where she was born
- ☐ Why she was in Britain
- ☐ If she was rich (aristocracy) or poor (peasant)
- ☐ Her religious beliefs



Evidence B: Ivory Bracelet

The ivory bracelets are high status objects. Only rich people (members of the aristocracy) could afford ivory items. The ivory comes from north Africa and it probably was worked somewhere like north Italy and shipped to Britain.



Evidence B: Ivory bangle



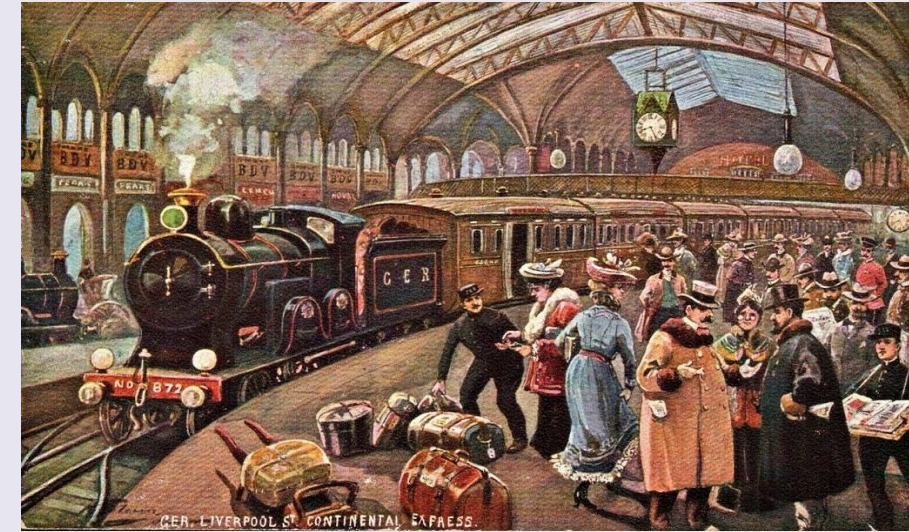
- _____
- _____

What does significant mean in History?

Queen Victoria Why might we say she was significant?

RESULTS

- Did it have cause a big change?
- What happened because of it?



Her reign had a big effect:

- More cities and towns were built which are still here today
- New railway links were built – many are still here today. Steam train travel transformed Britain
- The British Empire was at its largest during her reign – countries did not stop being ruled by Britain for many years after she died



Why can we say Victoria I was significant?

Queen Victoria was significant because



Sentence fragments

- she was Empress of the British Empire.....
- she was the second longest reigning monarch.....
- the Industrial Revolution happened when she was monarch.....
- England's railways and trains grew during her reign.....

Why can we say George Stephenson was significant?

George Stephenson is considered significant because...

REMEMBER

- Do people still remember him and what he did today?
- Who remembers him?
- Where is he remembered?

Annotation space



Why can we say George Stephenson was significant?

George Stephenson is considered significant because...

SHOW US

What has his work told us about the past?

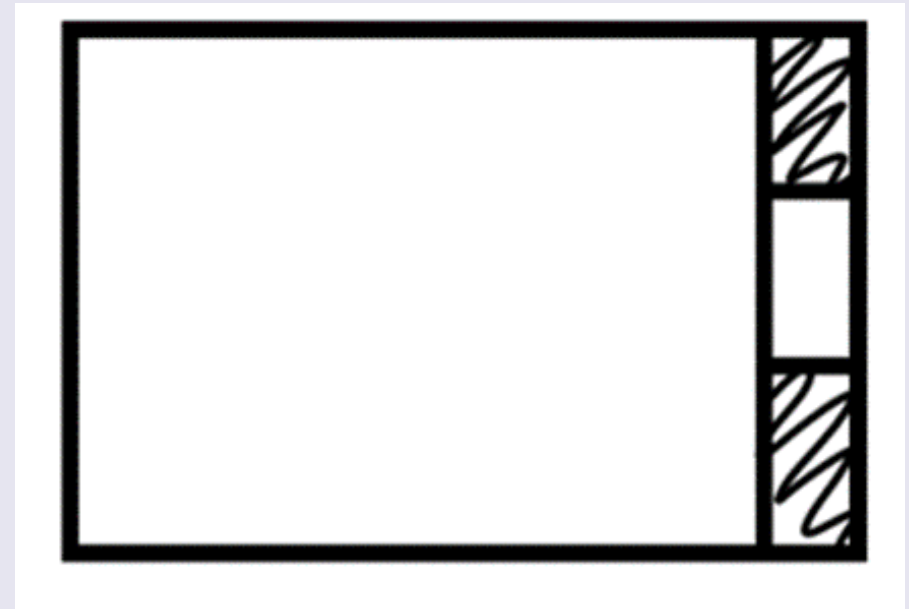
What can what he did and achieved tell us about what people thought and did at the time?

Annotation space



Application

I Do: demonstrate to the whole class measuring, and marking out Part A of the comb joint, with the correct scribbled sections which act as the waste we cut away later.



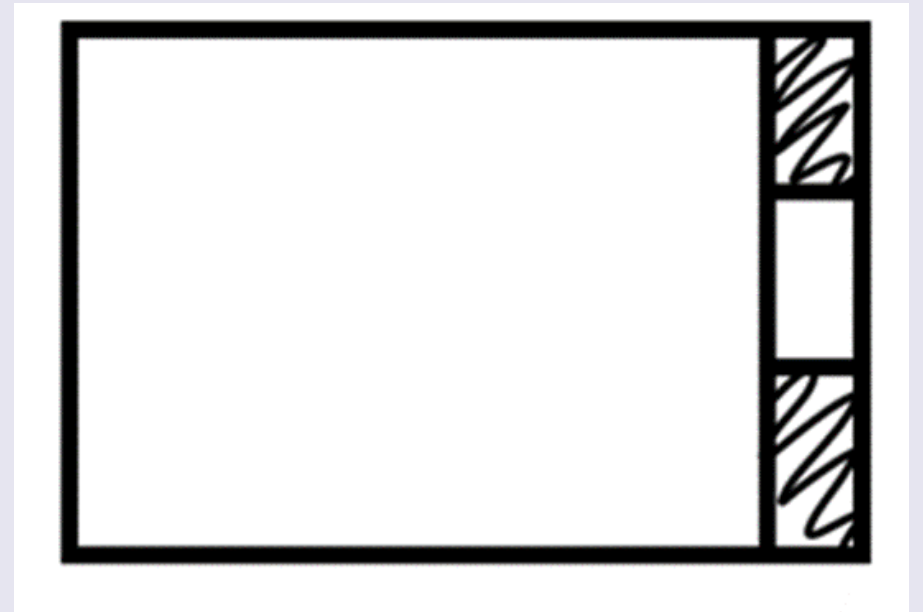
Application

We Do: either the students make notes or complete a quick sketch on a mini whiteboard while we are still all together to check for understanding before they go onto the 'you do' task or we mark out Part B together noting the different waste section.



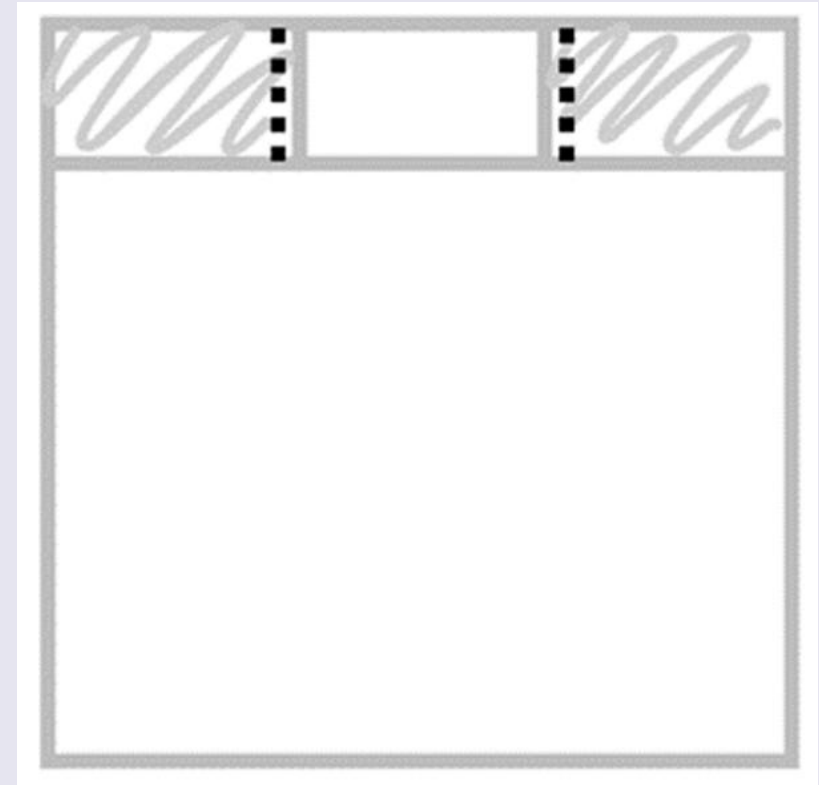
Application

You Do: students then complete the marking out of the comb joint independently using their notes and I will ask them to use their classmates to quality control their work against the success criteria



Application

When it comes to sawing timber for the first time, it is essential to model the stance they need and ask them to mimic this before we cut anything, ensuring they use the whole blade to cut through the waste sections to ensure quality.



Dotted line to indicate the first cuts

Application



Fade modelling scaffolds

Remove modelling scaffolds gradually and increase the challenge of tasks until eventually students complete tasks with no scaffold. For example, move through providing model answers ("I do"), partially completed examples, sentence starters and success criteria ("We do") until finally simply providing the question ("You do")

Optimise communication

Model

2 Provide a scaffold

Paired example – You Do
Explain why the pressure in the balloon increases when the bottle is heated.

When the bottle is heated the particles.....

This means they will.....

This causes the pressure.....

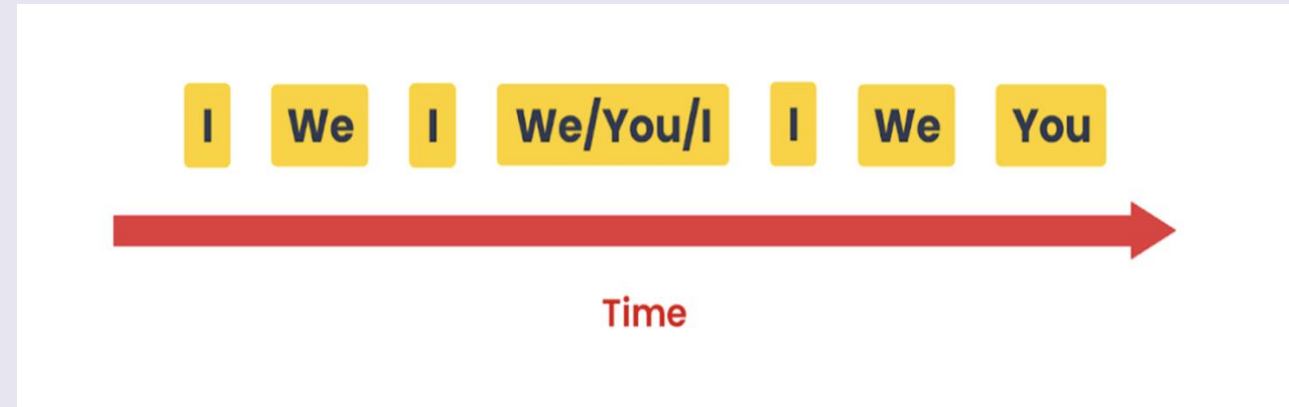
- + kinetic energy
- + collide
- + force
- + more frequently
- + increase

Steplab



Considerations and cautions

- I/We/You as a continuum (Quigley, 2021) – use adaptively
- Do not use as a rigid lesson structure
- It's not independent copying
- Timing – don't spent too long or too little on a stage
- Respect subject nuances...



Comparisons

English

Creative writing

I phase – Worked example of a piece = 30 mins

We....? May plan for it but may adapt depending on if further interrogation of the worked example needs to take place

Maths

Two digit multiplication

I phase – couple of worked examples + a live model with further think aloud = 10 mins

We phase – a problem solved collaboratively = 5 mins

You phase – further problems independently (on MWB)....

CfU: Does the teacher need to re-model?

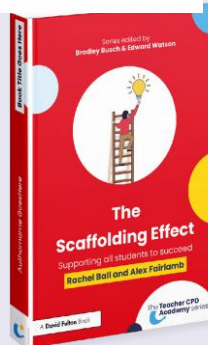
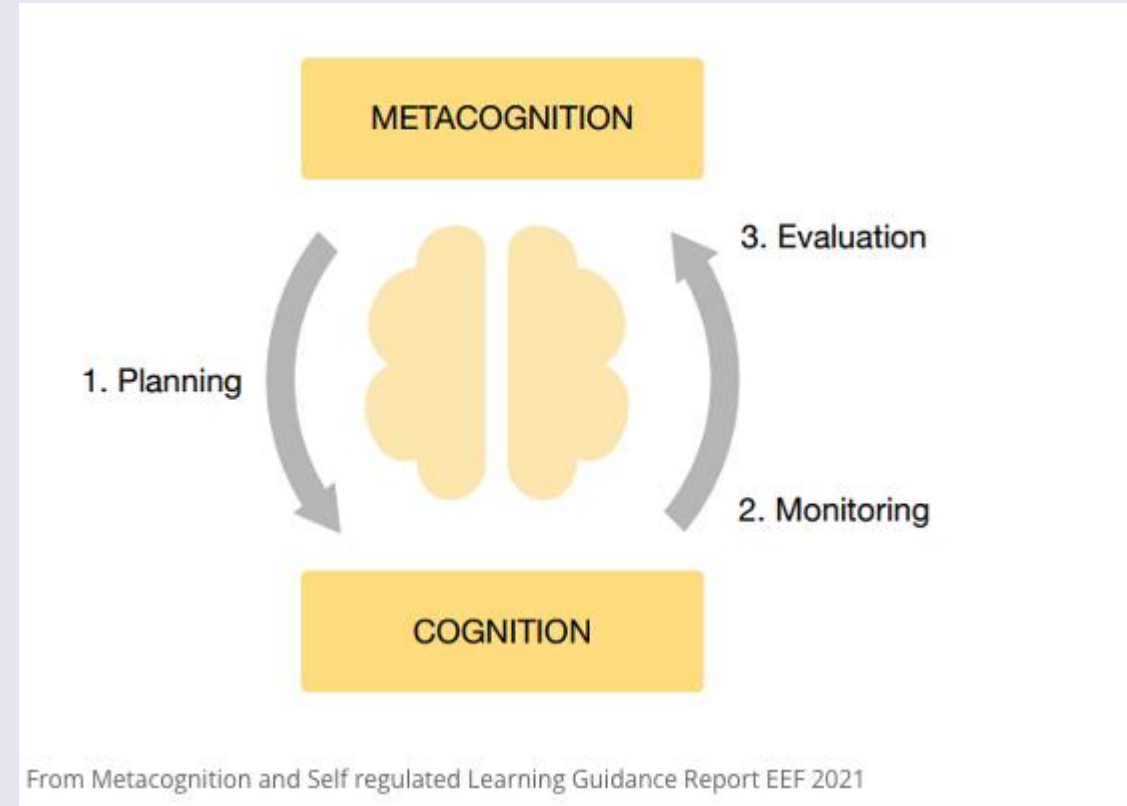
Live Modelling: Think-alouds



Research

Methods teachers could use when live modelling:

- Teacher alerts students to the **methods used** to form their initial understanding of the problem or task
- Teacher articulates **how they know a decision is correct** or not
- Teacher demonstrates **how to use a particular process or procedure** to complete a task



Research

“Live Modelling shows that success isn’t something that comes as the result of a click on a powerpoint slide. Success is a process of thinking, editing and reflecting again. Importantly, what is shown is that mistakes are okay.”

Roberts, 2022

“It’s ok to feel frustrated at this point, I often do”

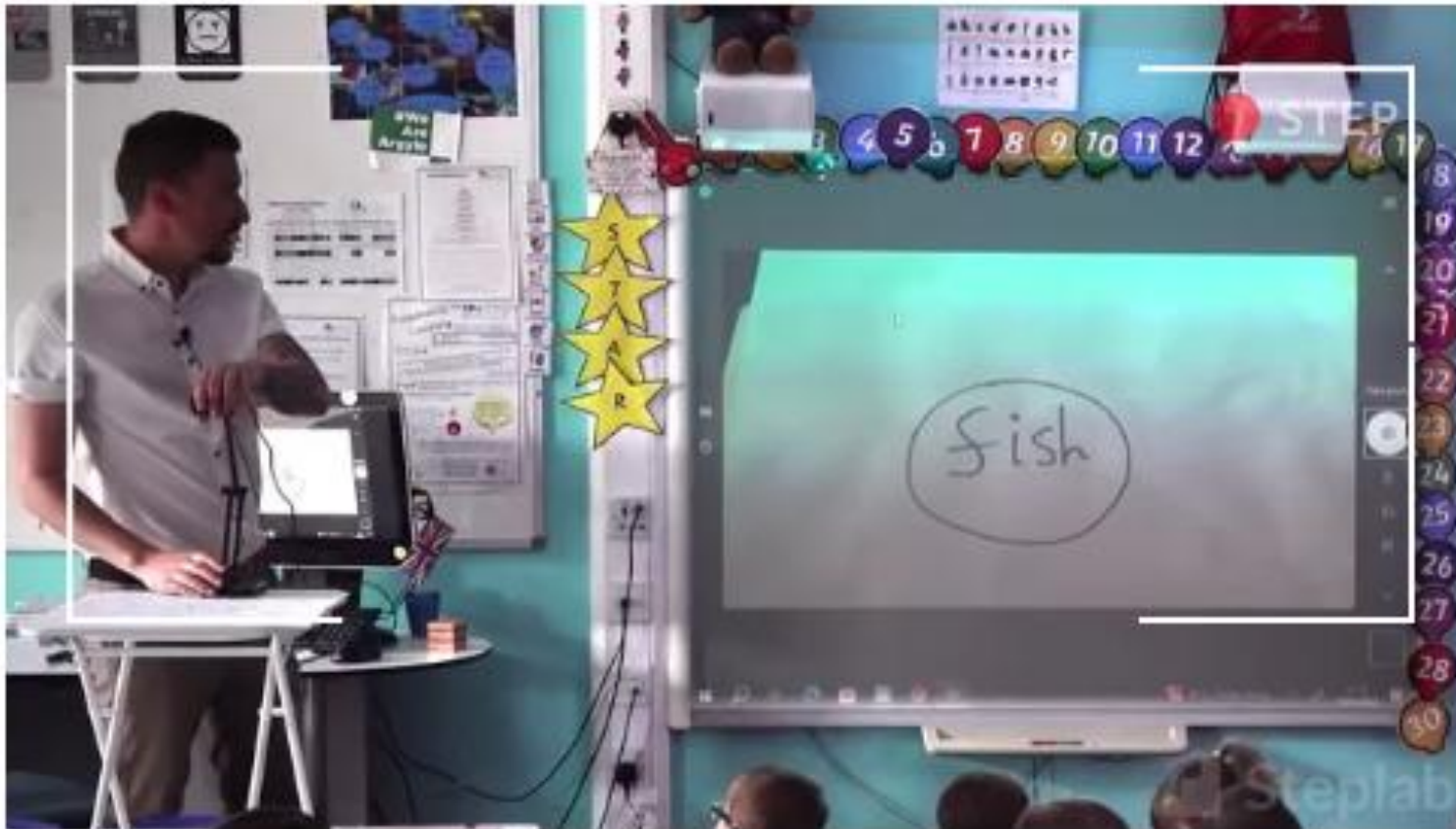
“I used to struggle with this, but then I found this strategy..”

“When I first looked at this problem I didn’t know where to start, but then..”



Application

Model



Application



Considerations and cautions

- Consider having a pre-written model as a prompt
- Be explicit about everything you are doing and thinking – remember the curse of expertise
- Lean into the mistakes! They are part of learning
- Consider how to avoid passivity e.g. active margin for students to record interesting aspects of the model and DON'T just let students just copy your model!
- Handwrite

[Exemplar script](#)





Pause point: Turn and Talk

Do you use faded modelling scaffolds like I/We/You?
Discuss an example where you use this or you can see potential for using this.

Do you currently live model? How could you use this strategy?



3. Scaffolding of Retrieval Practice

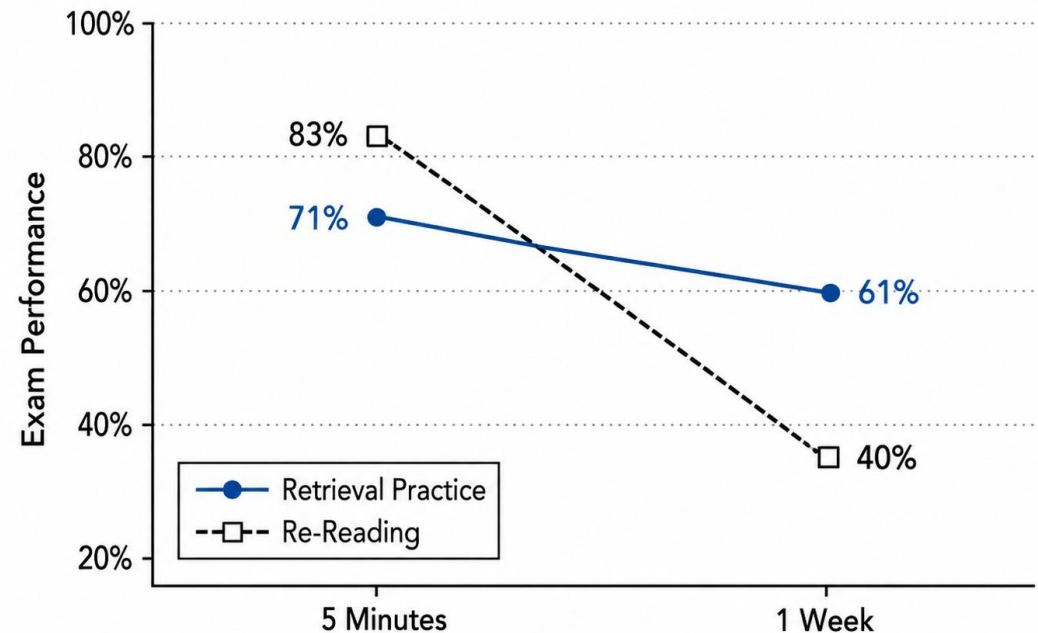


Research

'Testing is a powerful means of improving learning, not just assessing it'

(Roediger & Karpicke, 2006)

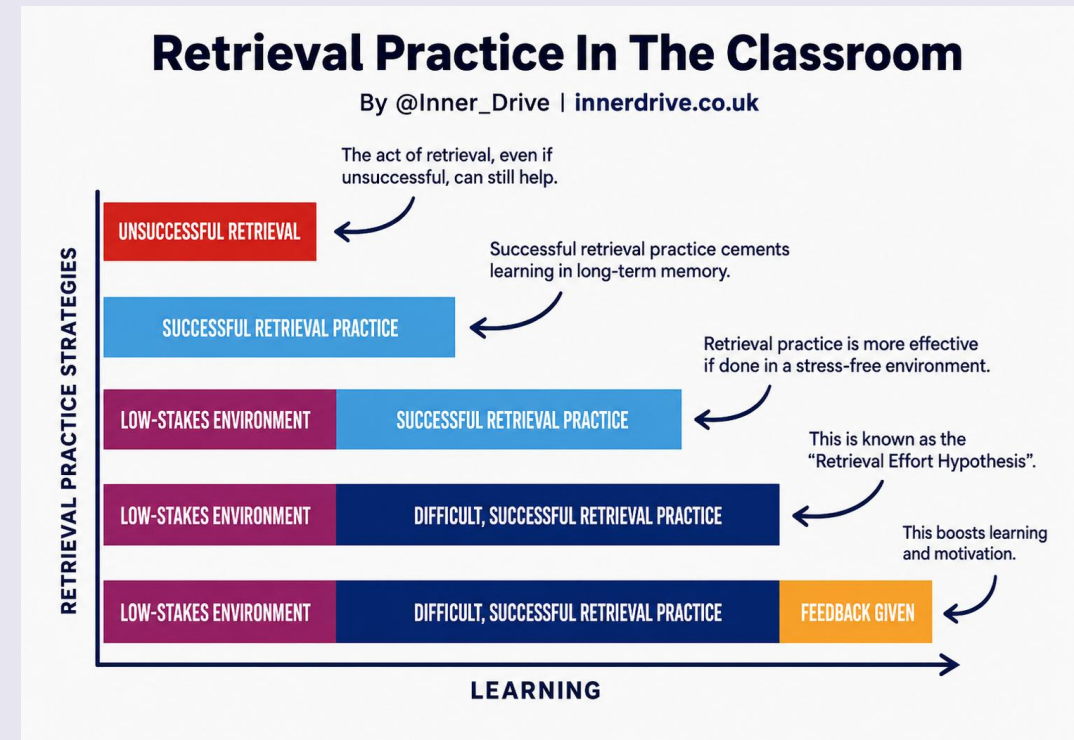
Figure 2.1 College students remember information after re-reading in the *short term*, but retain significantly more after retrieval practice over the *long term*.



But Retrieval practice needs to be scaffolded

'...the sweet spot where students are challenged, but not so much that they cannot answer any of the questions'

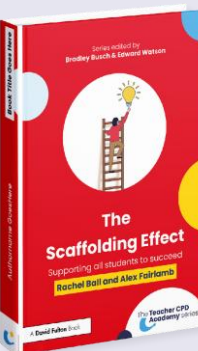
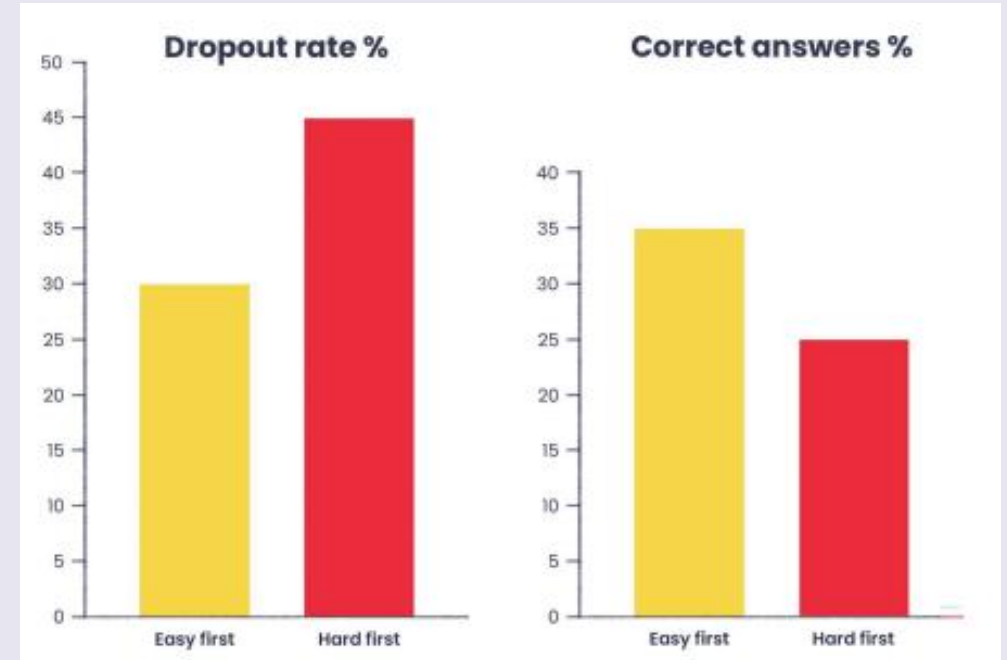
(Inner Drive, 2021)



Application

Example of retrieval questions which build in difficulty: (Jekyll and Hyde)

- A. Which two characters going on a walk together are introduced to us at the start of Chapter 1?
- B. What is Utterson's profession?
- C. Describe the narrative perspective in Chapter 1
- D. Give one description of the man by Enfield in Chapter 1
- E. Explain what Utterson means when he used to say: "I incline to Cain's heresy"



Application

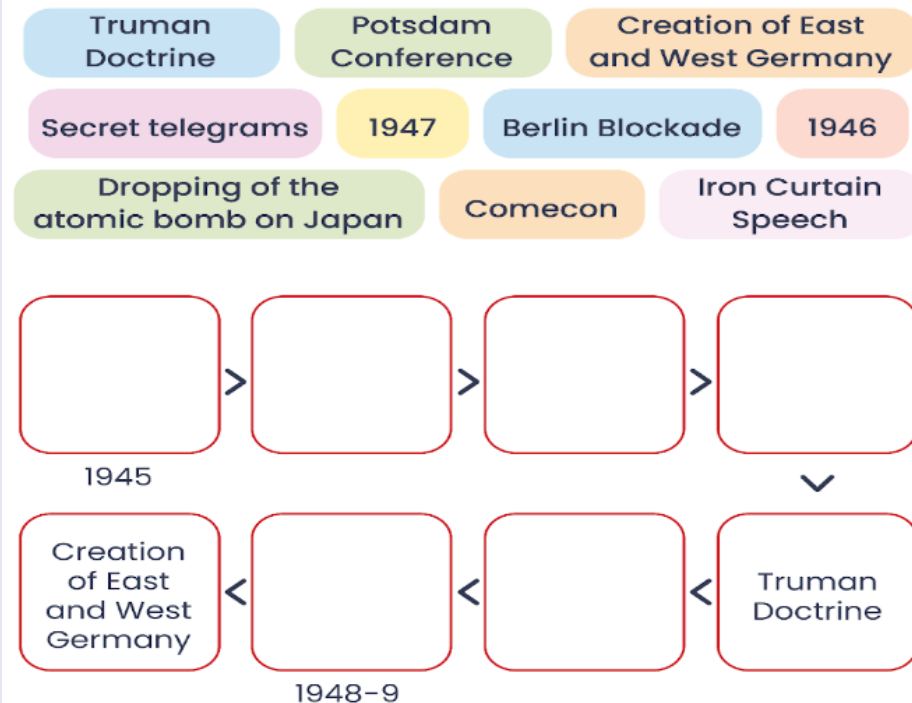
Q: What was the US foreign policy during the Cold War to halt communism?

- A. Hint: What is the term for the foreign policy used by the US during the Cold War to prevent the spread of Communism?
- B. Hint: The Korean War was an example of where we see the US employ this strategy by sending soldiers as part of UN.
- C. Hint: It is associated with President Harry Truman and his 1947 Truman Doctrine

Chronology Connection

Put the dates and events in the correct chronological order.

Hint? Bank of Dates and Events



Misconception alert: Consider how we know which came first between the atomic bomb on Japan and the Potsdam Conference.

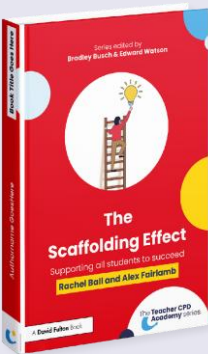


Considerations and cautions

- Give hints... but only after an appropriate wait time (Desirable difficulty, Bjork, 1994)
- Ensure they are weak hints
- Avoid artificial cues – ‘it rhymes with ...’ or ‘it begins with ...’ (Raichura, 2018)

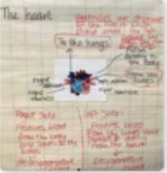


4. Scaffolding through verbal nudges

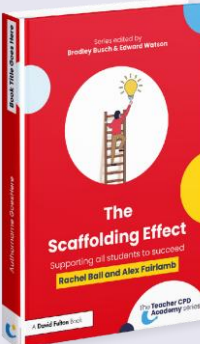


Research

“ statements made by the teacher to focus students on the cognitive and metacognitive processes needed to complete a learning task ”
(Fisher & Frey, 2010)

What can it look like in practice?	For example:
Visual 	Visual scaffolds may support a pupil to know what equipment they need, the steps they need to take or what their work should look like. • A task planner • A list of the steps a pupil needs to take • Model examples of work • Images that support vocabulary learning 
Verbal 	Providing a verbal scaffold may involve reteaching a tricky concept to a group of pupils, or using questioning to identify and address any misconceptions. • "Let's look at this together..." • "What have you done before, that will help you with this task?" • "Don't forget, your work needs to include..." 
Written 	A written scaffold will typically be provided for a pupil to support them with an independent written task. It could be the notes made on the whiteboard during class discussion; it could even be the child's own previous work used to support their recall. • A word bank • A writing frame • Sentence starters 

SEN in Mainstream Guidance Report,
EEF



Application

Cognition Prompts

- Why would we always place the brackets here and not here?
- What kind of tool would be best to cut this material?
- Why would Fern Riddell agree with this statement?
- Why would we use the preterite tense here?
- Why would this be an objective of an entrepreneur?
- Why has the artist chosen this medium?

Metacognitive Prompts

- Make sure you multiply the bottom numbers first.
- Don't forget to have your diagram next to you so that you know which piece to cut first.
- How would we always start an essay with this kind of question?
- How would you start planning a response to a speaking card?
- When we have a difference question, what do we need to first do?
- Last time we used this medium, what did you do?

Application

Models

Secondary Primary



This video has been created by Steplab. [Report an issue](#)



Application



Considerations and cautions

- Avoid rounding up
- Avoid artificial prompts e.g. 'It starts with a T' or 'it rhymes with'
- Avoid labouring the nudges if the student clearly doesn't know it





Pause point: Turn and Talk

Do you use verbal nudges or retrieval strategies like this?
Discuss an example where you use this or you can see potential
for using these

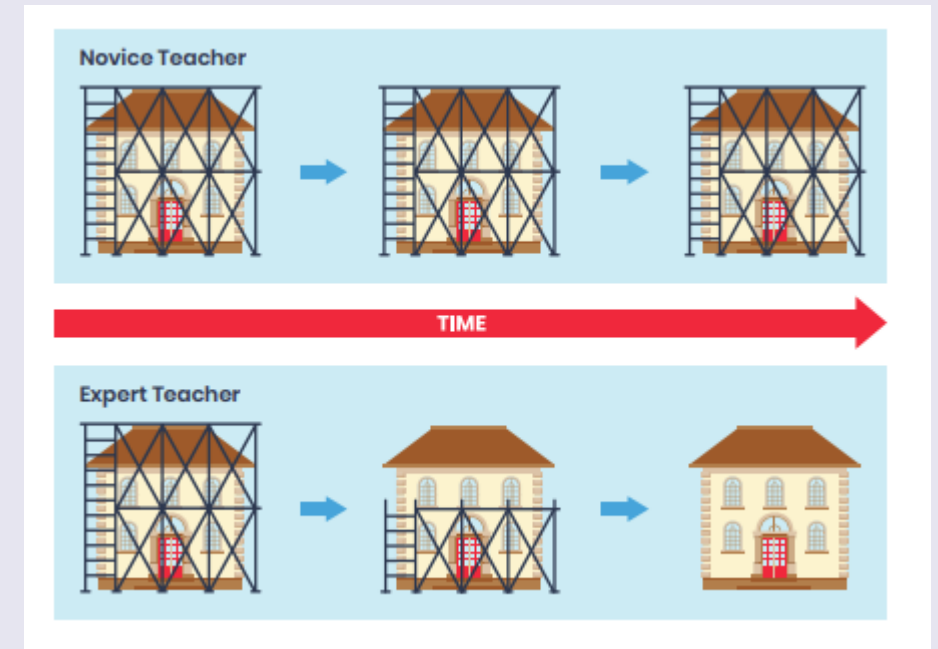




In Summary

Pitfalls of scaffolding

- Don't leave in place too long...
- ...But don't remove too soon!
- Not about dumbing down work
- Avoid top-down, rigid approaches
- Not labour intensive
- Quality Assurance hunts
- Scaffolding should be adaptive
- Ensure effective PD



“Scaffolds are not intended to be permanent. If everyone has a scaffold all the time, it's not a scaffold, it's just your lesson plan.”

Fairlamb and Ball, 2025

Is checking for understanding the most important of Rosenshine's Principles?

Illuminated by @Inner_Drive | innerdrive.co.uk



Thank you!

Rachel Ball @MrsBallAP

PD Specialist Steplab & Former
Assistant Principal T&L, SLE

Dr Alex Fairlamb

@lamb_heart_tea

Trust T&L Coach, Consultant, SLE,
FHA, FCCT

