

Engaging with and in research: a worthwhile endeavour?

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Why engage with research?



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Teaching quality matters...

“There is a large body of research on how important teachers are to the academic outcomes of their pupils... [They] are the most important factor within schools that policy makers can directly affect to improve student achievement”

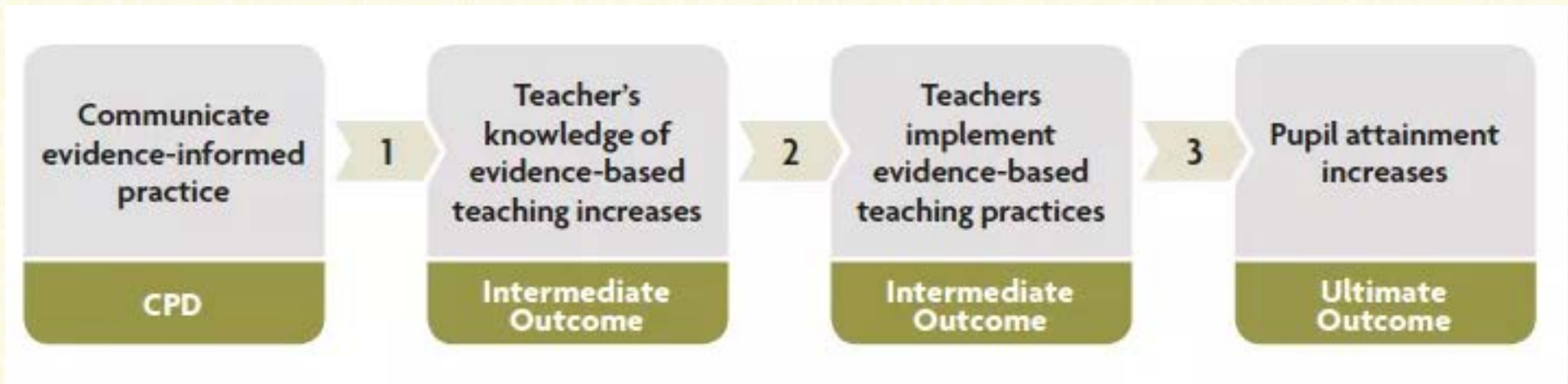
(Machin and Murphy, 2011)

Teaching quality matters...

“The effects of high-quality teaching are especially large for pupils from disadvantaged backgrounds, who gain an extra year’s worth of learning under very effective teachers compared to poorly performing teachers”

(Machin and Murphy, 2011)

A (simple) logic model for improving pupil outcomes through research engagement



Sims et al, Impact interim issue, 2017



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The problem?

New EEF trial results: 'light-touch' approaches to research unlikely to impact pupil outcomes

Three independent evaluations of randomised controlled trials published today by the **Education Endowment Foundation (EEF)** suggest that providing light-touch support for teachers to engage with research is not an effective way to improve pupil outcomes.

The EEF funded these trials – called the **Literacy Octopus** - and **Research Learning Communities** - to find out more about how academic research can have an impact on classroom practice and pupil outcomes. They are published after earlier EEF research found that many teachers struggle to interpret and act on findings from academic research, despite there being a growing appetite to do so.

EEF, 2017



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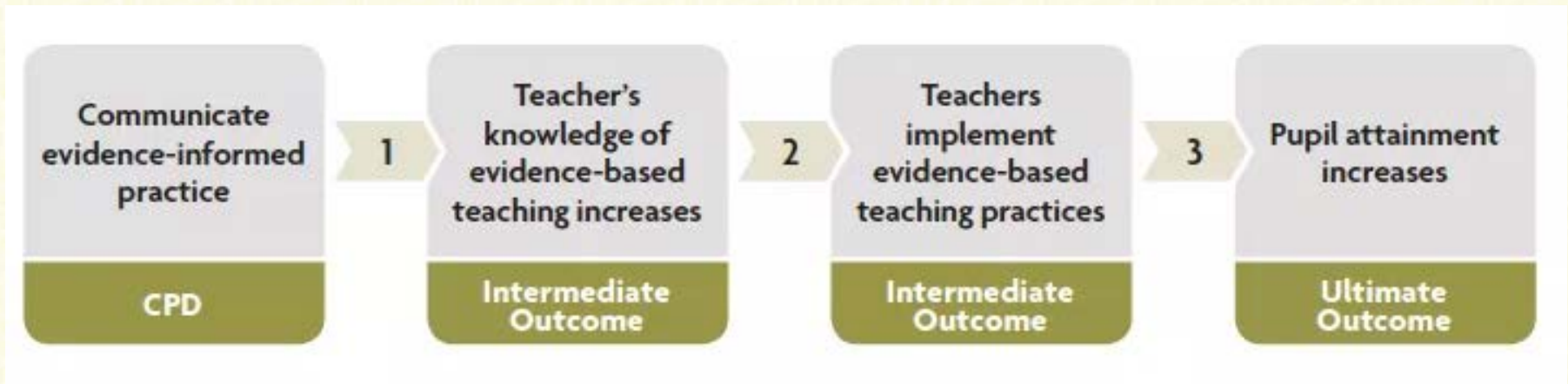
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A (too simple) logic model for improving pupil outcomes through research engagement



Sims et al, Impact interim issue, 2017



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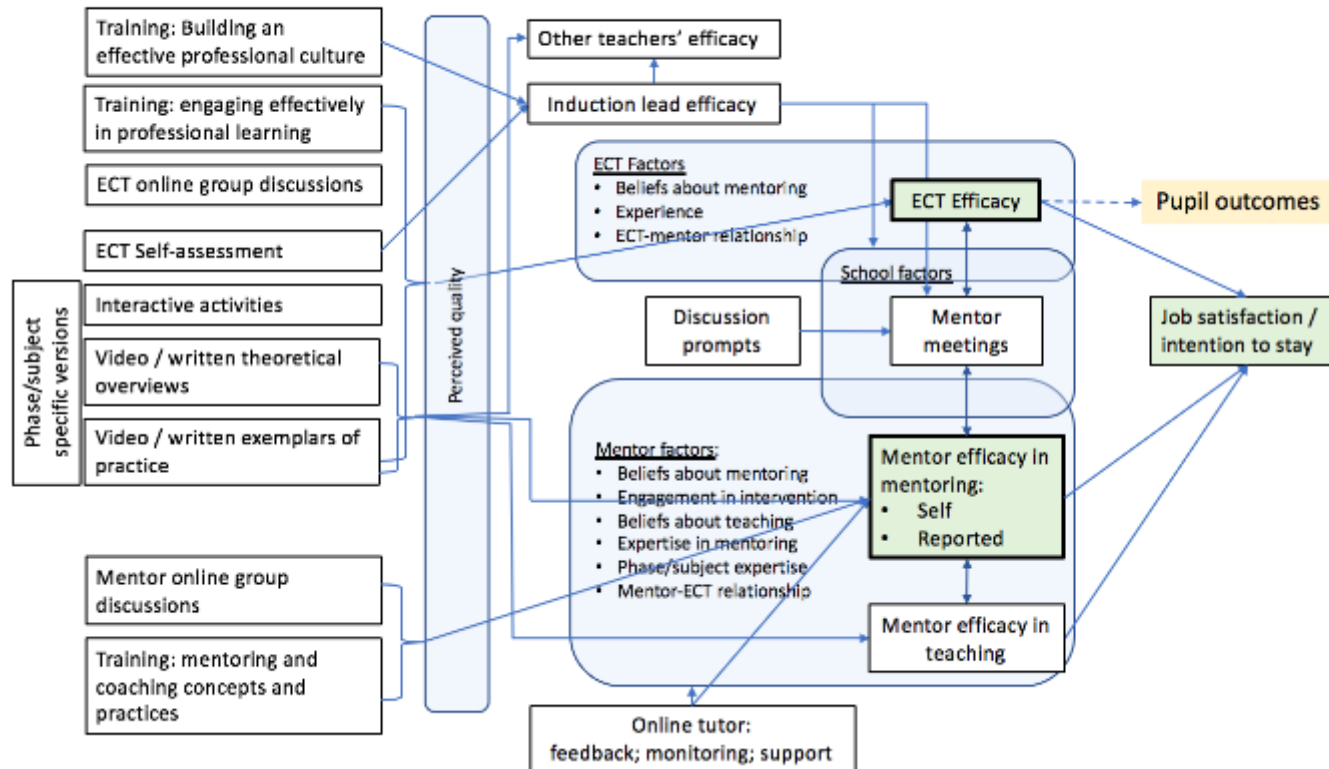


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A more complicated logic model

Chartered College of Teaching –Logic model (with moderators)



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Developing high-quality teaching

“Carefully designed/aligned teacher CPDL with a strong focus on pupil outcomes has a significant impact on student achievement. ”

(Cordingley et al, 2015)

Let's reflect

Think of the a time when you have planned to make a change either in your personal or professional life (eg getting fit, changing diet, new teaching / leadership approach).

- Did you successfully make the change? If so, why? If not, why not?

Implementation intentions

Control Condition	Date Plan Condition	Time Plan Condition																														
<p>[Company Name] IS HOLDING A FREE FLU SHOT CLINIC.</p> <p>Flu shots will be available on site at the [location of relevant free flu shot clinic] at the following times:</p> <table> <tr> <td>Monday, October 26th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Wednesday, October 28th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Friday, October 30th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Tuesday, November 3rd</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Thursday, November 5th</td> <td>7:00 am – 3:30 pm</td> </tr> </table>	Monday, October 26th	7:00 am – 3:30 pm	Wednesday, October 28th	7:00 am – 3:30 pm	Friday, October 30th	7:00 am – 3:30 pm	Tuesday, November 3rd	7:00 am – 3:30 pm	Thursday, November 5th	7:00 am – 3:30 pm	<p>[Company Name] IS HOLDING A FREE FLU SHOT CLINIC.</p> <p>Many people find it helpful to make a plan for getting their shot. You can write yours here:</p> <div>  </div> <div> <input type="text"/> , <input type="text"/> <input type="text"/> <small>(day of the week) (month) (day)</small> </div> <p>Flu shots will be available on site at the [location of relevant free flu shot clinic] at the following times:</p> <table> <tr> <td>Monday, October 26th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Wednesday, October 28th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Friday, October 30th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Tuesday, November 3rd</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Thursday, November 5th</td> <td>7:00 am – 3:30 pm</td> </tr> </table>	Monday, October 26th	7:00 am – 3:30 pm	Wednesday, October 28th	7:00 am – 3:30 pm	Friday, October 30th	7:00 am – 3:30 pm	Tuesday, November 3rd	7:00 am – 3:30 pm	Thursday, November 5th	7:00 am – 3:30 pm	<p>[Company Name] IS HOLDING A FREE FLU SHOT CLINIC.</p> <p>Many people find it helpful to make a plan for getting their shot. You can write yours here:</p> <div>  </div> <div> <input type="text"/> , <input type="text"/> <input type="text"/> at <input type="text"/> <small>(day of the week) (month) (day) (time)</small> </div> <p>Flu shots will be available on site at the [location of relevant free flu shot clinic] at the following times:</p> <table> <tr> <td>Monday, October 26th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Wednesday, October 28th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Friday, October 30th</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Tuesday, November 3rd</td> <td>7:00 am – 3:30 pm</td> </tr> <tr> <td>Thursday, November 5th</td> <td>7:00 am – 3:30 pm</td> </tr> </table>	Monday, October 26th	7:00 am – 3:30 pm	Wednesday, October 28th	7:00 am – 3:30 pm	Friday, October 30th	7:00 am – 3:30 pm	Tuesday, November 3rd	7:00 am – 3:30 pm	Thursday, November 5th	7:00 am – 3:30 pm
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Milkman et al., 2011

(See Fletcher-Wood, 2018 for more)

Standards for teachers' PD

The professional development standards:

1. Professional development should have a focus on improving and evaluating pupil outcomes.
2. Professional development should be underpinned by robust evidence and expertise.
3. Professional development should include collaboration and expert challenge.
4. Professional development programmes should be sustained over time.

And all this is underpinned by, and requires that:

5. Professional development must be prioritised by school leadership.



Standard for teachers' professional development

Implementation guidance for school leaders, teachers, and organisations that offer professional development for teachers

July 2016

Some effective approaches

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Instructional coaching and deliberate practice

‘great teaching...relies on the mastery and application of foundational skills, learned through diligent study’ (Lemov 2015)

THE FIVE PRINCIPLES OF DELIBERATE PRACTICE



**PUSH
BEYOND**
one's comfort
zone



Work toward
well-defined,
**SPECIFIC
GOALS**



FOCUS
intently on
practice
activities



Receive and
respond to
**HIGH-QUALITY
FEEDBACK**



Develop a
**MENTAL
MODEL**
of expertise

Deans for Impact (2016)



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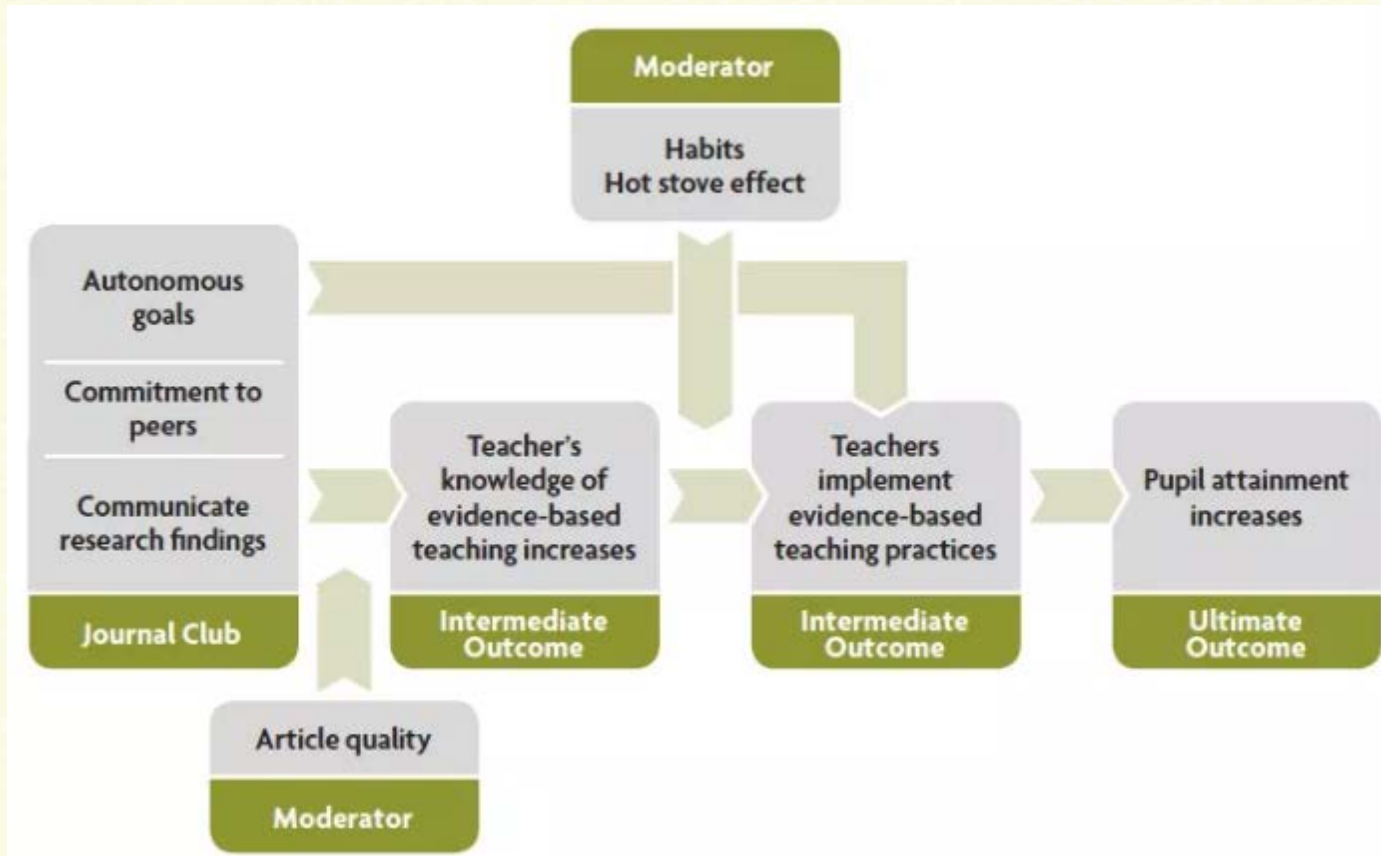
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Journal clubs



Sims et al, Impact interim issue, 2017



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**What does engaging in research
have in common with these?**

Does it meet the CPD standards?

Things that have no basis in evidence (Sherrington, 2019)

- Grade individual lessons
- Insist in LOs on the board
- Insist on conspicuous differentiation eg must/could/should
- Target grades on books
- Set teacher data targets linked to appraisal
- Encourage 'show teaching' for observations
- Require a set frequency of written marking comments
- Have lesson plans and data-annotated seating plans to hand during lessons



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Sharing matters



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CAN THE USE OF WORKED EXAMPLES DURING TEACHER LED MODELLING IMPROVE ATTAINMENT FOR GCSE HISTORY STUDENTS?

OUTLINE

Teaching students to answer exam questions is a problematic issue in history, due to the combination of applying subject knowledge and disciplinary skills in written form.

The aim of this action research project was to use the much researched worked example effect, created by Sweller (1988). Sweller's use of cognitive load theory to create an instructional method has been proven to boost outcomes, with Hattie identifying an effect size of 0.37. However, much of the research has been solely based on its use in maths and science, and not in a domain such as history.

Therefore, I created worked examples to replicate regular methods using a pre-written completed example during instruction on how to answer a specific exam question. The aim was to discover whether using worked examples, to reduce cognitive load, has a beneficial effect on students' attainment and encourage the wider teaching on 'how' to answer specific exam questions.



THEORY

COGNITIVE LOAD THEORY

In the 1980s, Sweller theorised that that our working memory is the part of our mind that processes what we are currently doing (can only see with a limited amount of information at one time). This is called the 'Cognitive Load'. If factors cause this cognitive load to increase, we will struggle to complete the task.

THE WORKED-EXAMPLE EFFECT

Sweller suggested that using 'worked examples' we can limit the burden of cognitive load. This method allows new concepts or problem solving, to be broken down into attainable sub-goals, without overloading students' understanding by presenting them with too much information at once. The cognitive support is passed on from 'teacher' to 'viewer' through carefully placed 'steps, explicit instruction' from an expert. (Le Jucker Clark et al., 2003)



Using convenience sampling, 36 students from two mixed ability Year 10 classes were split into two groups, matching their baseline data taken from attainment data.

METHODOLOGY

ACTIVE INGREDIENTS

Teaching: Students would be taught the same content, across two different topics with an emphasis on history, as knowledge identified as essential to success in modelling (COP, 2018).

Modelling: Teacher to model the answering of a 16-Mark Question Treatment Group: Worked example, using 'I, We, You' method Control Group: Using existing method of completed example answer.

Testing: Students would complete two tests each using one 16-Mark Question that was similar to those produced during the trial, to provide a desirable difficulty. Tests moderated and data collected.

Outcomes: Surveys were used pre and post intervention to identify the metacognitive benefits of using worked examples. Questions asked to identify student confidence, their ranked ranking of the key features of 16-mark questions and the impression of the intervention. Surveys were scaled so responses could be converted into data.

I DO, WE DO, YOU DO



I used a 'backward design' model of instruction (Clark et al., 2006), when fed back teacher input through the use worked example, completion example and then independent practice. This correlates many of the steps of most responses.

Step 1: Teacher led modelling of worked example. Using a visualiser, teacher writes a paragraph, explicitly teaching the specific steps and thinking involved.

Step 2: Teacher guides completion example. Using a visualiser and student voluntarism to write, which allows students to practice specific steps with teacher support.

Step 3: Independent practice by students. Students applying the knowledge and schemas to a different problem, using worked and completion examples to support.

I Do
WE Do
YOU Do

KEY FINDINGS

EFFECT SIZE

+0.32

An effect size of +0.32, equivalent to 4 months progress (EEP)

ATTAINMENT

83%

83% of students in the intervention improved their marks over the trial

METACOGNITION

26%

On average, weaker students improved by marks 4 (26%)

METACOGNITION

26%

A 26% increase in student confidence on how to answer 16-Mark Questions.

METACOGNITION

51%

A 51% increase in student identifying the key features of a 16-Mark Question.

IMPACT:

- Weaker students (lower) made greater progress than higher performing students, on average a 4-mark improvement vs 2 marks
- Effect size of 0.32, marginally lower than Hattie's findings of 0.37 (2008)
- The use of completed examples did continue to show a positive effect for weaker students, equal to that of worked examples, however for higher performing students, performance regressed.



QUALITATIVE RESULTS

100% of students could now identify the structure of a 16-Mark question and 78% the key features of a paragraph.

Confidence in how to answer the questions rose 26%

Student perceptions of the used of worked examples were positive, with 4.4/5 being the average score on "How useful was this method", with the below quote applying feedback:

"Giving the teacher model as an answer set them working as a 'this helps me come up with a firm answer for the questions and gives me a better understanding of how to write each paragraph clearly"

REFERENCES

- Sweller, J. (1988) Cognitive Load During Problem Solving: Effect on Learning Transfer. In: Cognitive Science, 10(1).
- Sweller, J. (2006) Instructional Design for the 21st Century. In: Sweller, J., van Merriënboer, B. & van Oers, B. (eds) Cognitive Load Theory: Design Principles for Instruction. Amsterdam: Springer.
- Clark, K., Quisenberry, F., and Sweller, J. (2012) Making Instructional Design Effective: Evidence for Worked Examples Instruction. American Journal of Education, 117(4).
- Sweller, J., van Merriënboer, B., & van Oers, B. (2019) Metacognitive and Transferable Learning. In: Oxford Handbook of Instructional Design. Oxford: Oxford University Press.

CONCLUSIONS

- As well as confirming the positive effect of worked examples, this study has revealed how its use can be successfully applied in a discipline like history.
- Using the 'backward design', I, We, You model is an effective instructional method to which we teacher input, as it allows a gradual learning process and supports the development of schemas.
- 'I, We, You' could be utilised across one lesson or across a number of lessons, focusing on key concepts/skills.
- Knowledge remains key to the of successful application of modelling using worked examples and the metacognitive benefits for students. Mastery skills modelling.
- Teachers and schools should seek to implement worked examples, alongside methods to reduce Cognitive Load, into their curriculum from ASJ onwards.

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Subject Leader, Meols Cop High School



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EEF, 2017



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How can the Chartered College help?

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- Original Research
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Questioning techniques

10. Technology

Tom Sherrington and
Sara Stafford

What's the idea?

Web-based formative assessment tools make it easier to collect and analyse responses from whole classes instantly.

What does it mean?

There's a wide range of technology designed to assist feedback and questioning. Use it well!

What are the implications for teachers?

There are two areas to explore:

1. **The in-class response** – using student answers to guide your teaching.

2. **The data analysis** that some tools offer, which help you to generate data over time.

Check your school policy about devices and its resources. Flickr is an example where only the teacher needs a device, but other examples rely on every student having their own. Ideally tablets and other devices should be provided by the school, or there could be a well-established 'BYOD' approach with appropriate guidance, if all users are using their own.

- Research reviews
- Compact guides
- Windows into the classroom



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CPD Packs

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MOOCs



- FutureLearn
- MyPD
- More to come!



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Evidence-informed teaching self-assessment toolkits

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Networks

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Speaking up - Developing Oracy

Delivered by international expert, Professor Paul Warwick, this session will explore the importance of developing oracy within your classroom and across the school curriculum.

 **Windsor Business Centre,
Trinity Point, High Street,
Halesowen, West Midlands,
B63 3HY**

 **20th May**

 **4:00pm-5:30pm**



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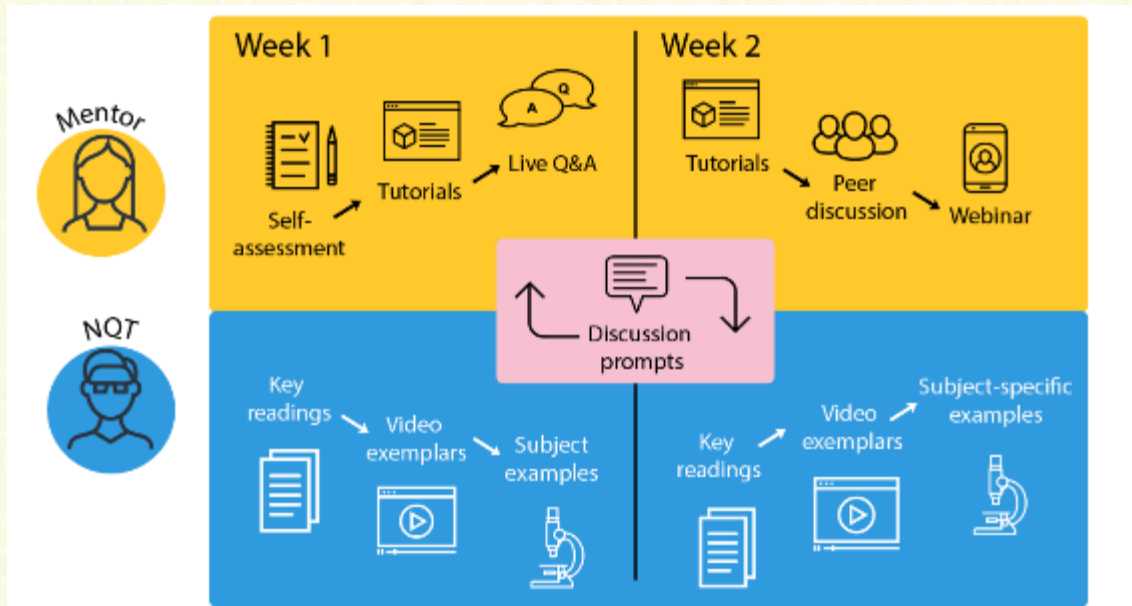
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Early career work



- Accelerate
- EEF Pilot



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- 14 month certification programme
- £850
- Focused on expert classroom practice



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Fellowship



- 10 years' teaching experience
- Contribution to the profession



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