# DEVELOPING YOUR MODELLING

*WEBINAR 2*

Mr Metacognition

## An Introduction to Metacognition
24 June

Developing your understanding of why metacognition matters and exactly what it is

## Improving Feedback and Evaluation
15 July

Explore approaches to ensure that feedback is effective and is utilised

## Developing Your Modelling
1 July

Understand different approaches to effective modelling in the classroom

## Developing Independent Learners
17 July

Explore ways that we can develop more resilient and independent learners


## Getting Questions Right
8 July

Explore exactly what makes effective metacognitive questioning

## Ensuring Effective Revision
22 July

Develop your understanding of what makes effective revision

# A Little Ask...

**Share comments and photos across social media!**

X: @MrMetacognition

BlueSky: mrmetacognition.bsky.social

LinkedIn: Nathan Burns

Pay as you feel/can

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# Who Am I?

- Nathan Burns
- Former Head of Maths/Pastoral Lead/MAT Lead
- Metacognitive researcher and author
- Full time teacher educator

Website

Books


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# Contracting Sessions

- Note down questions so that you don't forget them.
- Opportunity to record them on the post-session survey.
- Reach out to me through my SM channels
- Email me: nathan@mrmetacognition.com OR mrmetacognition@gmail.com

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# Session Aims

- Understand why teacher-led modelling is a key component in the effective metacognitive development of students
- Explore a range of strategies to adapt our teaching to allow for effective metacognitive development
- Review a number of examples from a range of subjects and phases

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# 'Invisible' Metacognition

- Metacognition is invisible  - and only becomes visible when we take actions to illuminate it.
- Subject expertise incorporates a huge amount of metacognitive understanding (versus novice learners).
- We need to model both the cognition, and the 'meta'.

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# Explicit Justifications

What?

- Justify the choices that you make during modelling
  - Explaining where (relevant) you take a different possible pathway (use of a key word; strategy; use of prior knowledge and so forth)

Why?

- Ensures students learn from our experiences rather than trial & improvement 100 times over.
- Aim to lead to a greater depth of understanding.
- Model to students how an expert goes about decoding and completing a task.

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# Example

Imagine that you are demonstrating how to cut (and stuff) a pepper.

You will make decision around:

- The chopping board that you use (colour/material)
- The knife that you use (size)
- How you chop the top off (e.g. where you place your fingers)
- How you carefully remove the insides (with a spoon)

We need to narrate all of these points in order for the students to understand our thought processes

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# Example

## Method

1. **Get an adult** to preheat the oven (le four) to 200°C or gas mark 6.
2. Whisk (fouette) the eggs and sugar in a bowl until frothy, then add the baking powder, flour, lemon juice and zest.
3. **Get an adult** to melt the butter and add this.
4. Leave to stand for twenty (vingt) minutes, then pour the mixture (la pâte) into your tray, making twelve (douze) to sixteen (seize) cakes.
5. Bake (fais cuire) for eight (huit) to ten (dix) minutes.
6. Leave to cool down.

The words are in bold because...

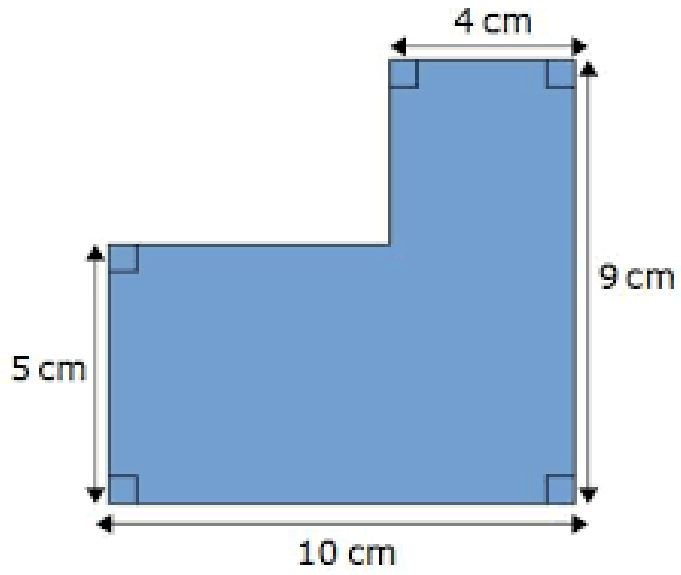
# Example

I would utilise a line graph for this data. This is because the data is continuous, not discrete, so a bar chart is not suitable. There is not a total amount so I cannot use a pie chart.

**Water Temperatures at Various Depths**

| Water Depth (meters) | Temperature (°C) |
|---|---|
| 50 | 18 |
| 75 | 15 |
| 100 | 12 |
| 150 | 5 |
| 200 | 4 |

# Example




There are two ways of calculating the area here, which are...

I am going to find the area using this method.... because...

# Example

Look in detail at this extract, from **lines 10 to 19** of the source:

> I am not one to hold a prejudice against any animal, but it is a plain fact that the spotted hyena is not well served by its appearance. It is ugly beyond redemption. Its shaggy, coarse coat is a bungled mix of colours, with the spots having none of the classy ostentation of a leopard's, they look rather like the symptoms of a skin disease. The head is broad and too massive, with a high forehead, like that of a bear, but suffering from a receding hairline, and with ears that look ridiculously mouse-like, large and round, when they haven't been torn off in battle. The mouth is forever open and panting. The nostrils are too big. The tail is scraggly and unwagging. All the parts put together look doglike, but like no dog anyone would want as a pet.

How does the writer use language here to describe the hyena's appearance?

You could include the writer's choice of:

- words and phrases
- language features and techniques
- sentence forms.

**[8 marks]**

The key words that I focus on are...
BECAUSE

The author uses the sentence structure...
BECAUSE

AQA

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# Example

barriers to accessing healthcare services:

- socioeconomic
- psychological
- physical
- cultural and language
- geographical

- Why do we emphasis some factors over others?
- Our own experiences?
- Our local contexts?
- More national contexts?
- Comparing and contrasting...

# Strategy Comparison

What?

- Explicit modelling around the relative strengths, weaknesses, appropriateness of alternative strategies.

Why?

- Strengthen student knowledge of strategy appropriateness
- Improves problem solving and learner flexibility
- Deepens topic understanding

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# Example

$$3(x - 5) = 17$$

Expand?

Don't expand?

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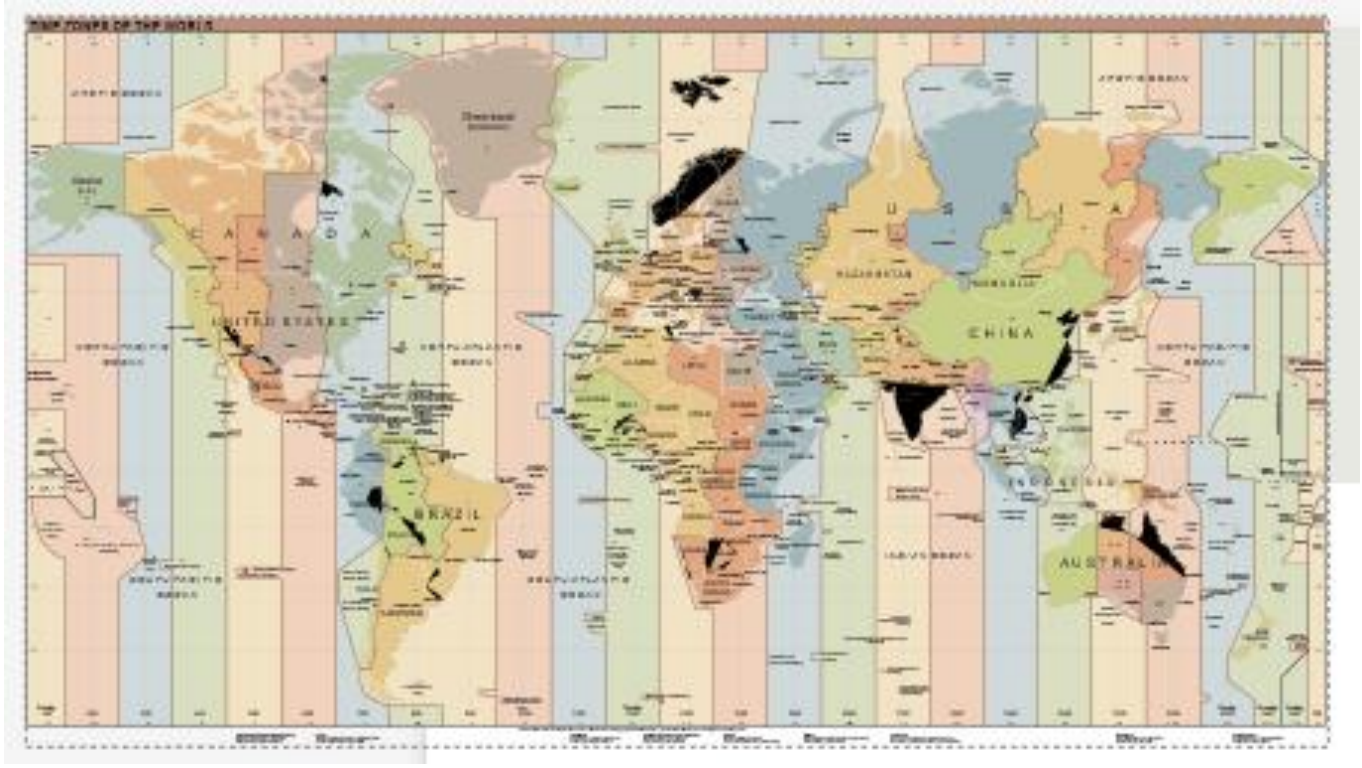
# Example




Wikipedia

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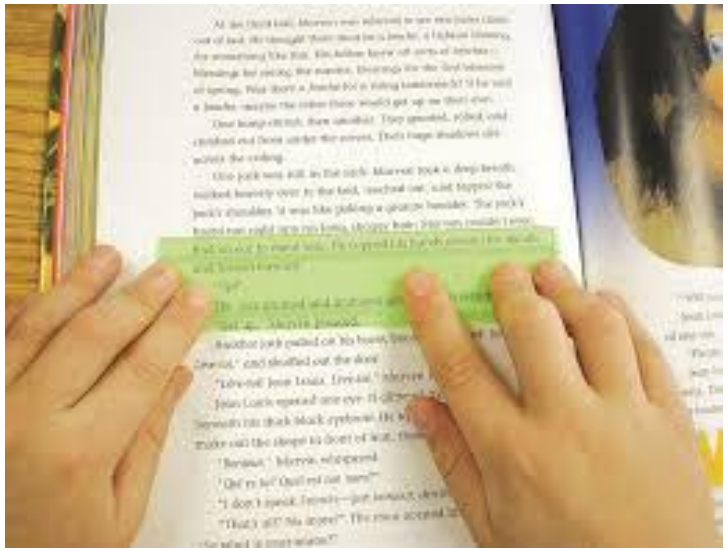
# Example

Just Reed and Play



Dyslexic.com

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# Example

Describe the similarities and differences between an animal cell and a plant cell.

- List out the characteristics of animal cells, then plant cells, then compare.
- List our a characteristic of an animal cell, then instantly compare it to a plant cell, then consider the next characteristic.

# Model Scaffold Use

What?

- Scaffolds used to bridge gaps between current levels and desired level.
- Focus here is on training students *what* scaffolds that they have available to them, *how* to use them and *why* they are helpful.

Why?

- High quality feedback supports student in identifying and improving on target areas.
- Improved independent learners

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# Example

For example...

- Periodic table
- Key word bank
- Formula sheets
- Knowledge organisers
- Calculator
- Model answers
- Calculation sheets

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# Explicit Processes

What?

- Continuously drawing focus to the different parts of the metacognitive cycles:
  - Plan, monitor & evaluate
  - Knowledge of task, self & strategies
- Providing a narrative as to when you are modelling in relation to one, and then moving on to another.

Why?

- Ensure that the *invisible* metacognitive is becoming more *visible*
- Model the processes of successful cognitive action

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# Example


CCEA

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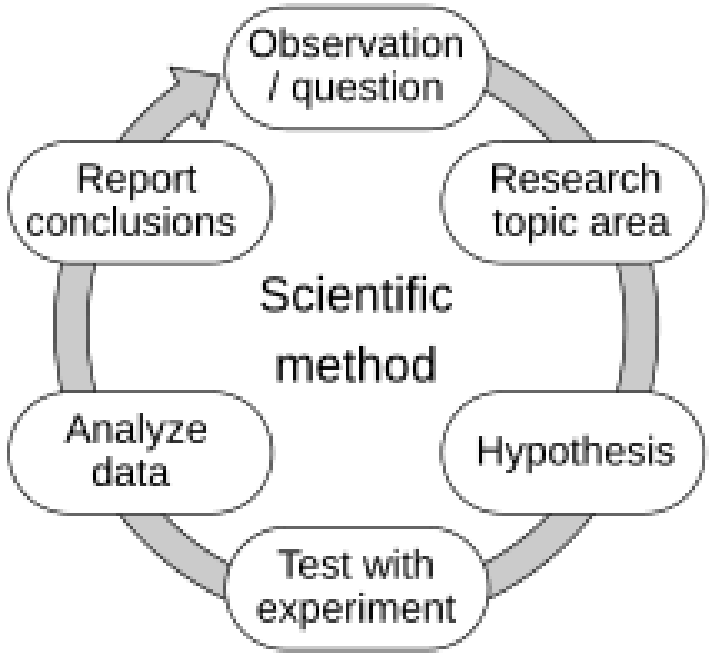
# Example




Wikipedia

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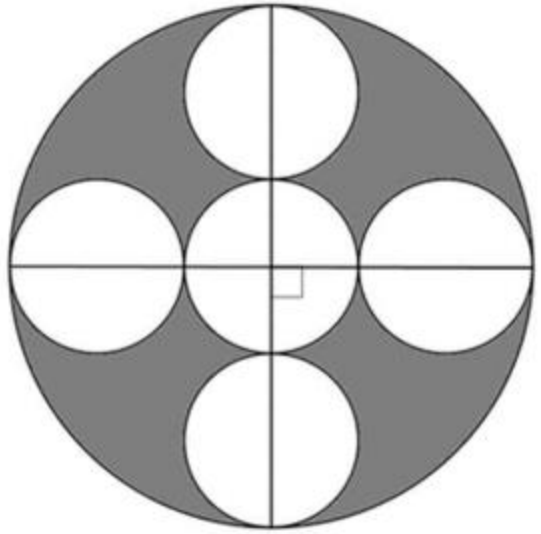
# Example

Five identical small circles are drawn inside one large circle as shown in the diagram.

The centres of the small circles all lie on one or both of the diameters shown.

The diameters are at $90°$ to each other.



Find the fraction of the large circle that is shaded.

MEI

# Good, Better, Best Answers

What?

- Provide students with 3 answers to a given question.
- Similar in levels (e.g. A+ to A-; B+ to A+ etc.)
- Focus on drawing out subtleties of the best answer; aspects which are strong in one (even if not the best overall answer).

Why?

- Illuminate your expertise
- Illuminate task requirements and examiner expectations
- Drawing attentions to subtlety

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# Example

Explain what is meant by an ancient civilization:

- An ancient civilisation is one that is super old and doesn't exist anymore.
- Is a group of people, from a very long time ago, who often did things differently to how we did.
- An ancient civilisation is now extinct and is a group of very similar people.

*What is good about each answer?*

*What might the best overall definition be?*

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# Example

What is meant by the composition of soil?

- The composition of soil is three different parts.
- Topsoil, subsoil, bedrock.
- Soil is topsoil and subsoil and bedrock.

*What is good about each answer?*

*What might the best overall definition be?*

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# Knowledge of Grid

What?

- Knowledge of grid is a planning tool to get students to think about...
  - Knowledge of task
  - Knowledge of self
  - Knowledge of strategies
- These are the fundamentals of *any* cognitive activity

Why?

- Student forced to attend to these factors
- Places emphasis and priority on these areas (and moves it away from just doing the task)
- Scaffolds an approach to a (complex) task

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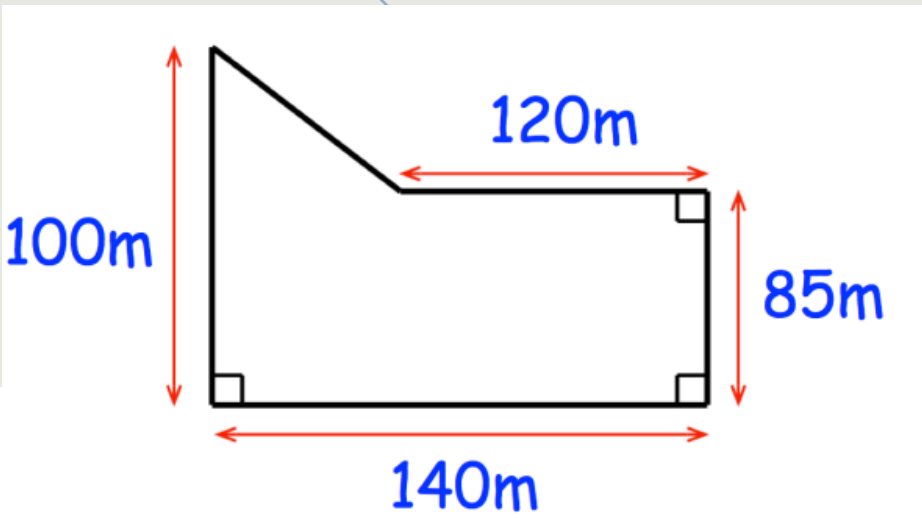
# Example




Farmer Martin keeps chickens in the field below.
Each chicken needs $3m^2$.
What is the maximum number of chickens that he can keep?

| Knowledge of Task | Knowledge of Self | Knowledge of Strategies |
|---|---|---|
| Finding the maximum chicken that can be in there<br>Whole number<br>Round down<br>Show method | Not confident on method to find area<br>Know need to divide area by chickens<br>Confident I need to round down | Area – split into two shapes or three.<br>Not clear on area of a trapezium<br>Do know area of triangle – slower but more confident |

# Example

Choose two different types of animal, and describe their life cycle

| Knowledge of Task | Knowledge of Self | Knowledge of Strategies |
| --- | --- | --- |
| Need two types.<br>Need to be different.<br>Need to explain stages.<br>Need to have a good life cycle | Certain on butterflies<br>Less sure on frogs<br>Can do sheep etc. But that's easy | Describe one and then the other.<br>Compare and contrast as I go along |

# Example

Using the map, identify key features that have been covered in our recent topic.

| Knowledge of Task | Knowledge of Self | Knowledge of Strategies |
|---|---|---|
| Given a map – mark on there<br><br>Need to include everything recently covered<br><br>What is that... | Know about North and South<br><br>Can do Europe, Africa, Asia, America<br><br>Know there are others | May need to go to Knowledge Organiser<br><br>Can use globe to help |

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# What's Next?

**Share comments and photos across social media!**

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BlueSky: mrmetacognition.bsky.social

LinkedIn: Nathan Burns

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Survey

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# Book in Further Support

- 500+ educators now asked me to work in their context next year.
- INSET – full & half day; in-person and online; designed around context and whole-school aims
- Leadership support and consultancy
- Subject/year group focus and support
- Focus on key areas: oracy; revision; independence; feedback; resilience
- On-going and year-long packages
- Leaders in Metacognition course

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